Wildlife Management Report ADF&G/DWC/WMR–2023–1

# Sitka black-tailed deer pellet-group surveys in Southeast Alaska, 2017–2021

Karin McCoy



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Alaska Department of Fish and Game Division of Wildlife Conservation

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This Wildlife Management Report was reviewed and approved for publication by Richard Nelson, Management Coordinator for Region I for the Division of Wildlife Conservation.

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**Cover Photo:** Sitka black-tailed deer photographed on a trail camera, Gravina Island, Alaska.  Photo by Boyd Porter.

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# Introduction

This report provides a detailed summary of Sitka black-tailed deer (*Odocoileus hemionus sitkensis*) pellet-group count data for watersheds surveyed during April and May 2017–2021 in Region I, Southeast Alaska. Deer pellet-group surveys were conducted annually in Southeast Alaska from 1981 to 2021. Summary data for watersheds surveyed in other years are provided in the Appendix. This information was collected by the Alaska Department of Fish and Game (ADF&G), Division of Wildlife Conservation, in collaboration with the U.S. Forest Service (USFS). Data were used by both agencies to monitor deer population trends throughout Region I. Management focused on key watersheds used as indicators within Region I.

Pellet-group survey locations are conducted on deer winter range, which occurs primarily below 1,500-feet elevation in areas composed mostly of productive old-growth (POG) forest, although other habitat types often co-occur. Whenever possible, transect lines are designed to traverse critical winter range for deer. It is characterized by high-quality forage and large trees forming a dense canopy providing thermal cover and intercepting snow (Hanley 1984). The lower snow depths found on critical winter range make it easier for deer to move and forage during severe winters (Parker et al. 1984, Hanley and Rose 1987). It should be noted, however, that critical winter range may not be the most optimal habitat under all winter conditions (Hanley 1984). Open-canopied forest such as young clearcuts (<30 years of age) and commercially unproductive old-growth forests have abundant forage during mild winters, but because they do not intercept as much snow, forage can be buried during a deep-snow winter. Over a series of mild winters deer numbers may increase above the carrying capacity of critical winter range (Hanley et al. 1989). When this happens, mortality can occur the following winter if snow is deep due to limited resources (Hanley 1984).

Estimates of true abundance of Sitka black-tailed deer are challenging to obtain. This is especially true in large areas due to the difficulty of detecting deer in the remote and densely vegetated rainforests they inhabit (Kirchhoff 1990, Brinkman et al 2011). Because of this, indices that correspond to abundance are often used to estimate the magnitude and direction of change in populations (Skalski et al. 2005). This can be accomplished with either direct observations of deer (with or without detection corrections applied) or indirect measures such as pellet-group or track counts.

Indices such as pellet-group counts have been the most cost-effective means of monitoring for large changes in deer density at broad spatial scales and were widely used by area management biologists for over 50 years (Keegan et al. 2001). However, Brinkman et al. (2013) questioned the utility in using MPGP as an index for management purposes due to high variability that without interpretation could be misleading. Mean pellet-groups per plot (MPGP) data can be variable and imprecise and are considered an unreliable means to estimate either absolute or relative abundance (Campbell et al. 2004, Smart et al. 2004). Small upward and downward annual fluctuations in deer pellet-group density estimates are to be expected due to variability in survey conditions. Also, most mortality occurs in late spring, and pellet-groups have already been deposited on the landscape. Interpretation of results should focus on trends over time and do not represent annual point estimates. This is because factors other than changes in deer abundance can affect changes in deer pellet-group density. Snowfall patterns influence the distribution and density of deer pellet-groups observed from year to year in a number of ways.

Snow that persists late into the spring at elevations below 1,500 feet can limit the ability to consistently survey the same elevations and transects. In mild winters with little snow, deer are more broadly distributed to access forage in a greater variety of habitats and elevations. Because pellet-group survey transects maximize survey of POG forest, shifts in the use of other habitats by deer during mild winters can result in lower pellet-group densities even when population abundance has not changed. Limiting comparison of survey results to winters of similar snow depth can help with interpretation, and local snow data may facilitate a better understanding of survey results. Finally, it is important to note the timing of surveys when making inferences. Pellet-group surveys measure over-winter pellet deposition, and a reduction in pellet-group densities may not be observed until the following year. This is because most mortality occurs in late spring, and pellet-groups have already been deposited on the landscape.

In Southeast Alaska pellet-group decomposition rates are estimated to be 6 months during winter, and 4–11 months with increasing precipitation and warmer temperatures (Rose 1982, Schoen and Kirchhoff 1983, Kirchhoff and Pitcher 1988, Kirchhoff 1990, Farmer and Person 1999). In addition, green up and leaf out also makes detection of pellet groups more difficult (Kirchhoff and Pitcher 1988, Hemami and Dolman 2005). Furthermore, logistical factors such as staffing and access (e.g., logging or treefall on roads) can cause variability survey coverage.

Because pellet-group survey results are influenced by a number of factors, they are not usually sensitive enough to accurately reflect trends in abundance annually; therefore, surveying every few years is sufficient. They can be a valuable tool for assessing the approximate magnitude of a population crash or recovery over time, and for gross comparisons of relative densities between areas. They are also the only method currently available to evaluate relative change in population status within a day's time.

## Study Area

### LOCATION AND STUDY AREA MAP

Deer pellet-group surveys were conducted in multiple value comparison units (VCUs) within each game management unit (unit, GMU) in Region I, Southeast Alaska (Fig. 1). VCUs are USFS timber management units and are roughly equivalent to a watershed (USFS 2016). Over time, monitoring of some VCUs has been abandoned in lieu of monitoring others, usually in relation to changes in management concern or habitat (e.g., habitat changes caused by logging). General forest types within VCUs identified in this report follow the low-, medium-, and high-forest volume strata and numeric class categories established by the USFS (USFS 2016).

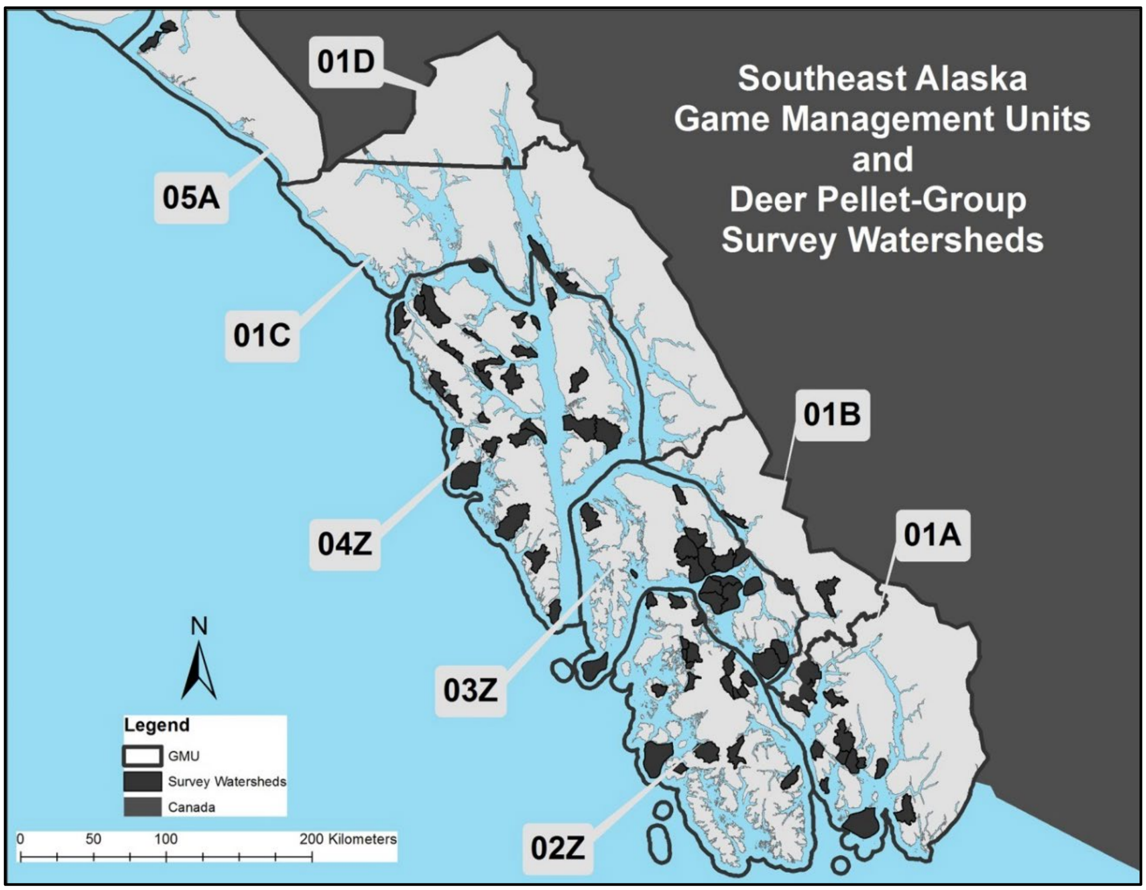



**Figure 1. Deer pellet-group survey watersheds as defined by the U.S. Forest Service (USFS 2016) within Game Management Units (GMU), Southeast Alaska. Note that Z indicates that no subunit is specified.**

### CLIMATE AND WINTER SEVERITY

Southeast Alaska has a maritime climate, which is characterized by periodic warmer temperatures in winter that inhibit the persistence of snow for long periods at low elevations. Due to the strong maritime influence on deer range in Southeast Alaska, winter snow conditions can be extremely variable. Temperatures and snow depths can change dramatically over the course of a few days. Freeze-thaw cycles condense snow, expose forage, and create a strong crust layer on snow which deer are able to walk on, providing increased access to forage.

Deer movement and access to forage is strongly influenced by timing and depth of snow. For example, early-season, heavy snowfall limits movement leaving some deer trapped in areas of high or low elevation where they are more vulnerable to hunters. Late-season snow can bury forage when deer energy stores are depleted. Consistent, moderate snowfall combined with consistent, low temperatures allow snow to accumulate, burying forage at lower elevations and making movement between patches of habitat increasingly difficult for deer.

Snow depth plays an important role in determining the temporal and spatial availability of forage, which in turn affects deer distribution, nutritional condition, productivity, and survival (Klein and Olsen 1960). In areas that are heavily fragmented, either naturally (e.g., muskegs) or anthropogenically (e.g., timber harvest), deer can have difficulty moving between patches of winter range. Low-elevation, productive, old-growth forests provide important winter range for deer during deep-snow winters (Hanley 1984, McCoy and Gregovich 2021). The dense canopy of an old-growth forest intercepts snow, such that snow depths are often considerably less than in open-canopied areas, making travel easier and forage more accessible (Wallmo and Schoen 1980, Hanley and Rose 1987, Kirchhoff and Schoen 1987). In addition, there are thermal gradients within forests, such that snow within forested areas tends to thaw faster than snow in open areas. Melted snow areas around trees, called "tree wells" illustrate this thermal effect.

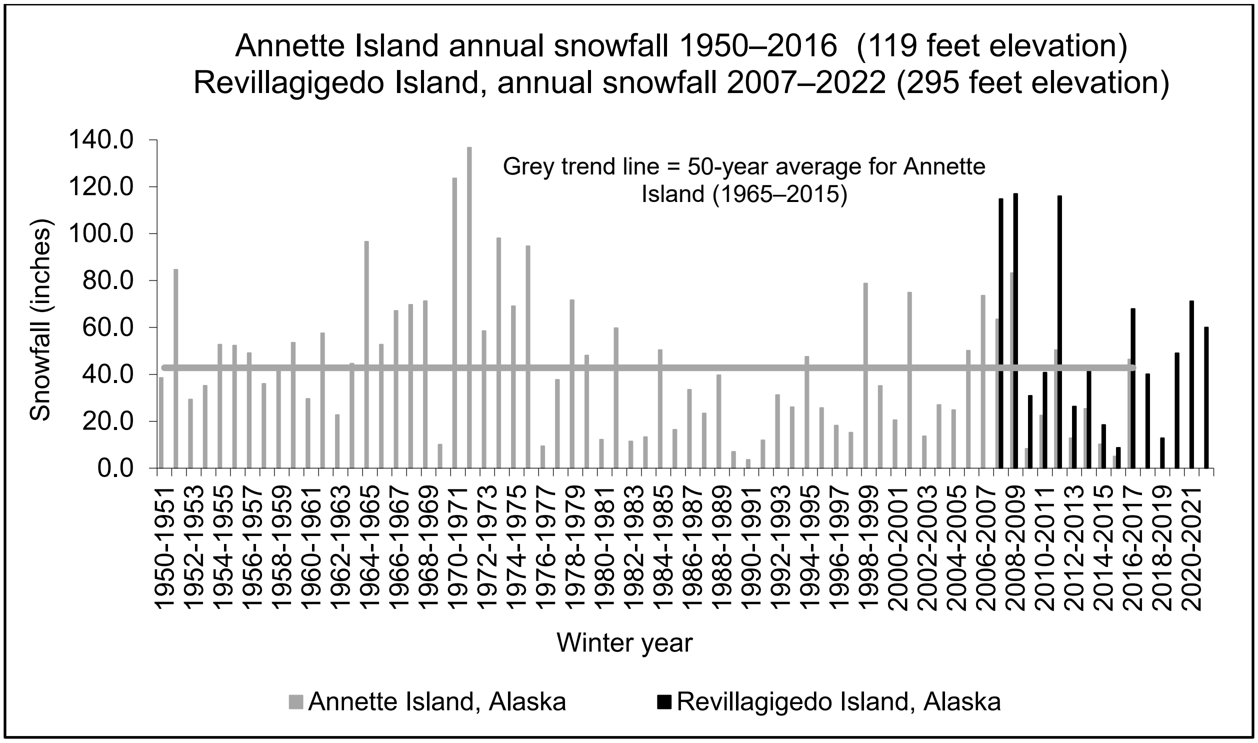
Because snow conditions can vary greatly among areas and elevations within a general geographic area, the collection of site-specific snow data allows a better understanding of how snow may have influenced deer pellet-group survey results. Snow data was also collected at multiple elevations in select watersheds where deer pellet-surveys were conducted to better assess how local snow conditions influence pellet-group densities. These VCU-specific snow data were collected at Bostwick Inlet, Dall Head, Helm Bay, Mitkof Island, Kupreanof Island, Douglas Island, and Shelter Island.

Deer management biologists rely on winter severity information to evaluate deer population dynamics. Snow patterns vary throughout the region, with areas farther north and east typically receiving more snowfall than areas to the south and west. Snow is deeper in higher elevations, further from saltwater, and on northerly aspects. Snowfall also varies considerably among watersheds and deer are challenged most in areas with higher snowfall where habitats are fragmented, there is little closed-canopy forest, and populations are near carrying capacity. Snow conditions and persistence also affect the timing of deer pellet-group surveys and can influence results. Comprehensive information of snow conditions must be carefully considered in order to infer any index of population trends using deer pellet-group survey results.

Snowfall and snow-depth data recorded by the National Weather Service at a number of weather stations positioned throughout Southeast Alaska illustrate that winter severity can fluctuate substantially in Southeast Alaska both temporally and spatially. Between 1995 and 2005, winter conditions were relatively mild across the region, with only 1 or 2 winters exhibiting above average snowfall. Subsequently, winter severity spiked and receded in a pattern similar to the 1970s. Winter severity ranged from average to well below average during 2017–2021.

Unit 1A — Snowfall on Annette and Revillagigedo Islands

Snowfall on Annette Island was above average from 2005 to 2008, and the winter of 2008 was the most snowfall on record since 1975 (Fig. 2); after 2008 winters were mild. The weather station on Revillagigedo Island (KTN 10N) reflected more snowfall than Annette Island during years of data overlap (2007–2017), even though the Annette station is at a higher elevation.

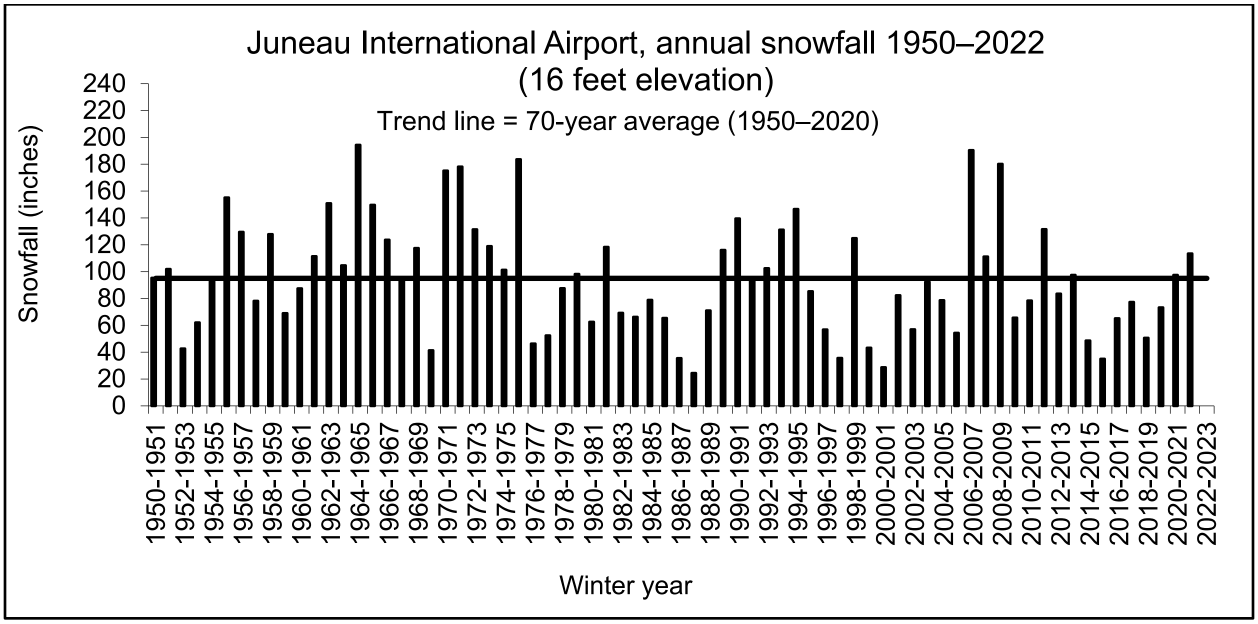



Source: ADF&G graphic using NOWdata available online from the National Weather Service (NOAA 2022).

**Figure 2. Annual snowfall 1950–2022, Annette and Revillagigedo islands, Alaska. Note that the collection of snow data was discontinued at the Annette Island weather station in 2017.**

Unit 1C — Snowfall on the Juneau Mainland

In the Juneau area, the second and fourth deepest snowfall levels were recorded (since 1950) during the winters of 2006–2008 and 2011–2012 (Fig. 3; NOAA 2022). This series of deep-snow winters likely had a cumulative effect. Subsequent winters from 2012–2021 were at or below the 70-year average (1950–2020) for snowfall, including some exceptionally mild winters. There was heavy snowfall in late winter of 2020–2021.

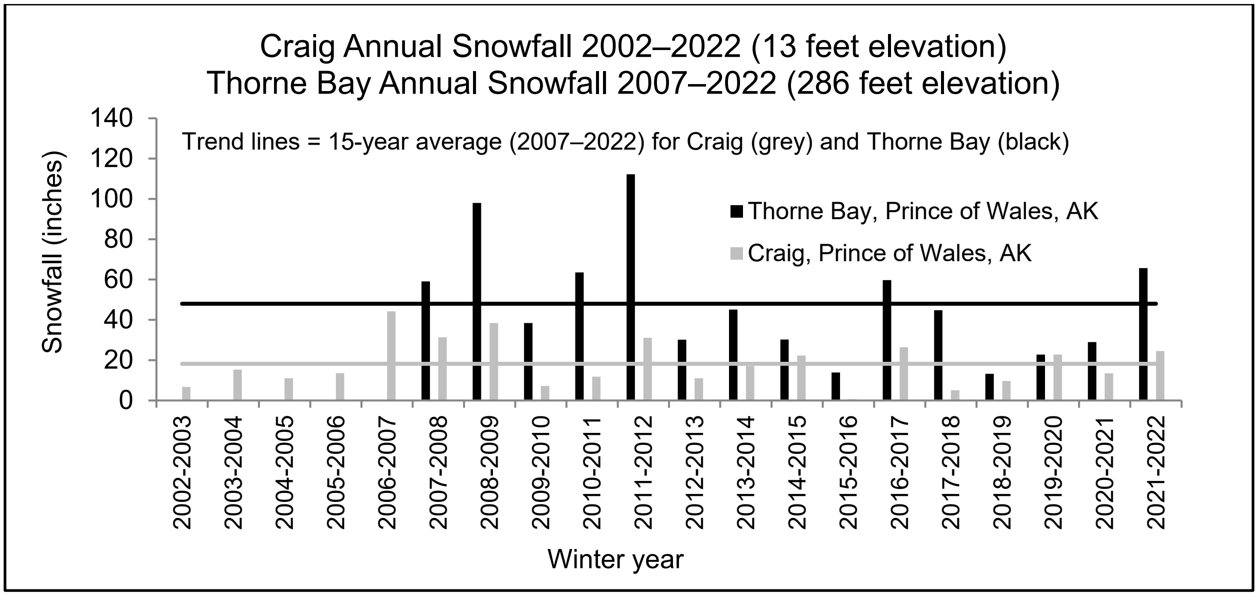



Source: ADF&G graphic using NOWdata available online from the National Weather Service (NOAA 2022).

**Figure 3. Annual snowfall 1950–2022, Juneau International Airport, Alaska.**

Unit 2 — Snowfall on Prince of Wales Island

Annual recorded snowfall was above average at both Thorne Bay and Craig stations during 2007–2009. The highest recorded snowfall, from 2002 to 2022, in Craig occurred during the winter of 2006–2007 (Fig 4, NOAA 2022). Snowfall during the winter of 2011–2012 was also above average. After 2012, snowfall was variable ranging from slightly above average to well below average, with very little snow during the winters of 2015–2016 and 2018–2019. Because Thorne Bay and Craig are located on opposite shores of Prince of Wales Island, different storm conditions can occur at these sites. Note that gaps in snow data (days and/or months) were estimated using data from before and after gaps in addition to location data from other stations. Values represent minimum snow depths (Fig. 4, NOAA 2022).

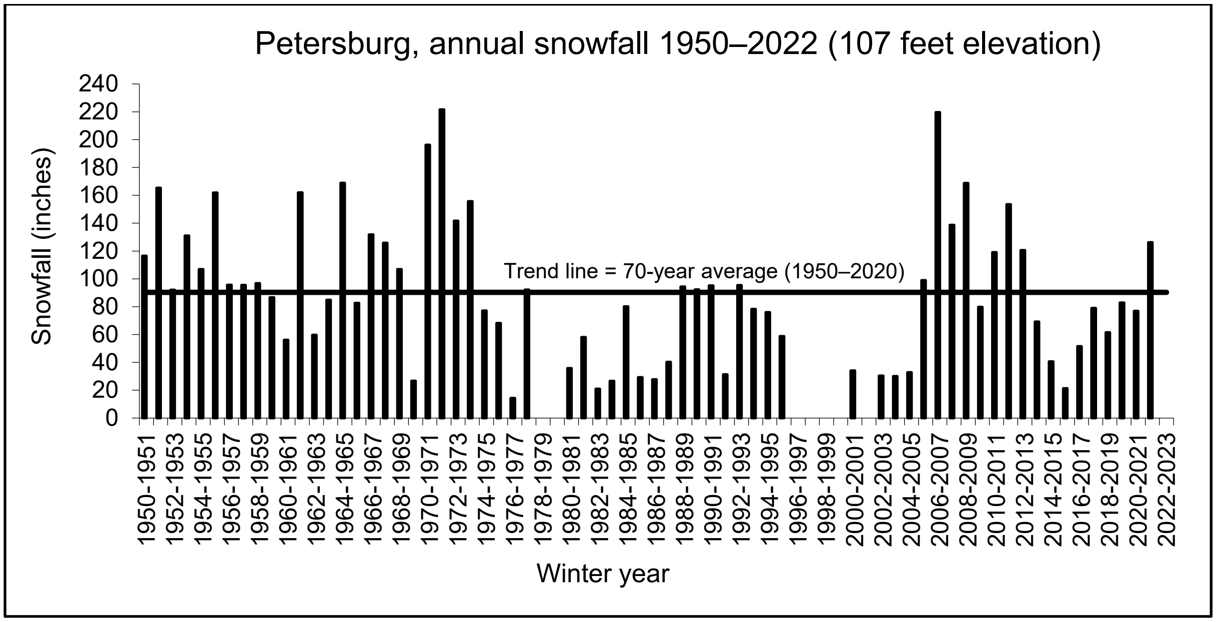



Source: ADF&G graphic using NOWdata available online from the National Weather Service (NOAA 2022).

**Figure 4. Annual snowfall Craig (2002–2022) and Thorne Bay (2007–2022) on Prince of Wales Island, Alaska. Note that gaps in snow data (days and/or months) were estimated using data from before and after gaps in addition to location data from other stations. Values represent minimum snow depths.**

## Unit 3 — Snowfall on Mitkof Island

In Petersburg, snowfall levels from 2005 to 2013 were above average in all but 1 winter (Fig. 5) and substantially deeper than the Juneau area during that time (Fig. 3, NOAA 2022). The winters of 2013–2021 were mild.

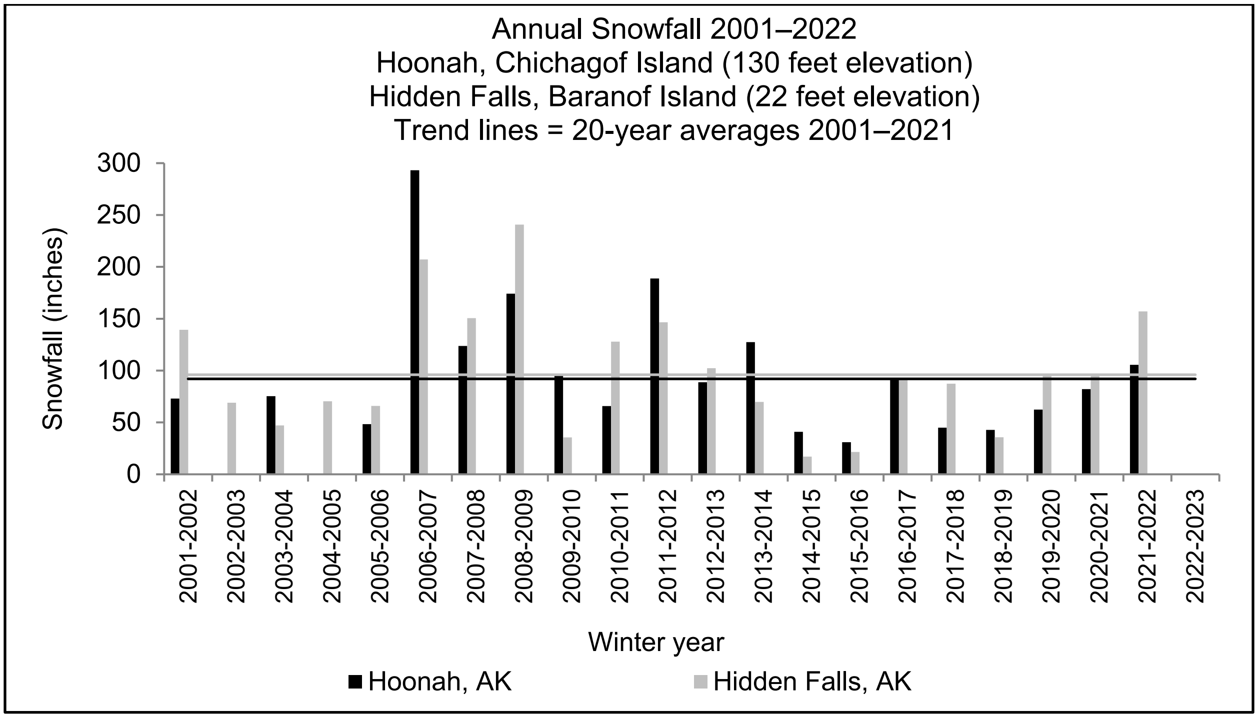



Source: ADF&G graphic using NOWdata available online from the National Weather Service (NOAA 2022).

**Figure 5. Annual snowfall, 1950–2022, Petersburg, Alaska.**

## Unit 4 — Snowfall on Chichagof and Baranof Islands

Snowfall levels during 2006–2009 were above average in the Hoonah and Hidden Falls areas of Chichagof and Baranof islands, respectively (Fig. 6, NOAA 2022). Winter snowfall was below average briefly, returned to average, then increased to above average from fall 2011 through spring 2014. The winters of 2014–2015 and 2015–2016 were exceptionally mild. Winters during the fall 2017 through spring 2021 were average to below average. Snowfall was not consistently deeper in one location versus another; however, there was slightly more snow in the Hidden Falls area of Baranof Island than in the Hoonah area of Chichagof Island during most of 2017–2021.




Source: ADF&G graphic using NOWdata available online from the National Weather Service (NOAA 2022).

**Figure 6. Annual snowfall, 2001–2022, near Hoonah, Chichagof Island and Hidden Falls, Baranof Island, Alaska.**

## Comparison of snowfall among areas of Region I

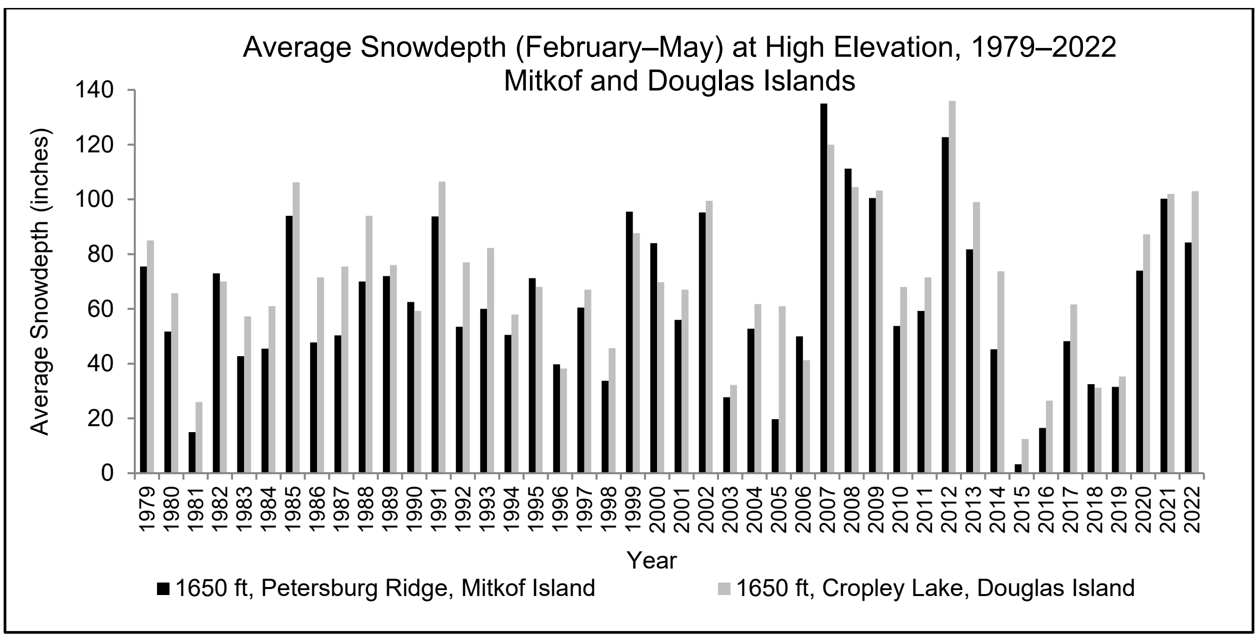
Relatively big snow years in southern Region I reflect conditions similar to average snow years in northern Region I. This pattern is more pronounced when comparing the Juneau area to Prince of Wales, where average snowfall is more than 5 times that of the Craig station on Prince of Wales (18 inches, Fig 4, NOAA 2022, 13 feet elevation) at a similar elevation. Annual snowfall at the Petersburg station (90 inches at 107 feet elevation, Fig. 5) is similar to that of the Juneau station, but the station is at a higher elevation. Juneau received more snow some winters while Petersburg received more snow other winters, despite the difference in station elevation. The Thorne Bay station on Prince of Wales Island (48 inches, Fig 4, NOAA 2022, 286 feet elevation) and KTN10 station (54 inches, Fig. 2, 295 feet elevation) near Ketchikan on Revillagigedo Island are at similar elevations and latitudes, and average snow depths are comparable. Average snowfall is similar between Hoonah (92 inches at 130 feet elevation, Fig. 6) on Chichagof Island

and Hidden Falls (96 inches at 22 feet elevation, Fig. 6) on Baranof Island, and similar to average snowfall levels recorded in Juneau and Petersburg.

The magnitude of difference in snowfall among northern and southern areas is more apparent for deep-snow winters. For example, during the 2006–2007 winter, there was 293 inches of snow reported at the Hoonah station, compared to 240 inches at Petersburg, 207 inches at Hidden Falls, and 190 inches at the Juneau station. There was substantially less snow measured at weather stations in the southern area of the region with 74 inches recorded at Annette Island and 44 inches at Craig on Prince of Wales Island. This difference was apparent but less pronounced during low snowfall years. For example, during the 2015–2016 winter, there was 31 inches of snow recorded at Hoonah compared to 21 inches at Petersburg, 22 inches at Hidden Falls, 34 inches at Juneau, 5 inches at Annette Island (National Weather Service Office [WSO]), and <1 inch at Craig on Prince of Wales Island.

## Comparison of snow depth in areas within Region I, Units 1C and 3

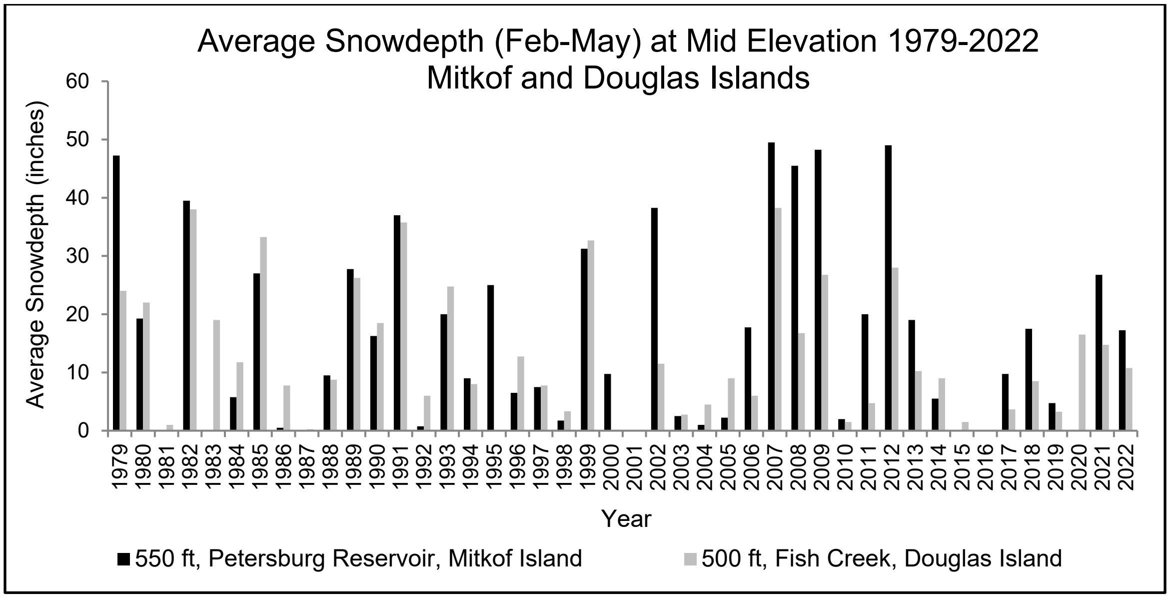
NOAA snow data were primarily available at lower elevation weather stations, which do not reliably reflect snow trends at higher elevations. In contrast, Natural Resource Conservation Service (NRCS 2022) does provide mid- and high-elevation snow-depth data. Comparing snow course data at 1,650 feet at different locations, such as Cropley lake (Douglas Island) and Petersburg Ridge (Mitkof Island; Fig.7), provides insight into trends observed at the edge of deer winter range (Units 1C and 3, respectively). Snow depth at 1,650 feet was similar in the Juneau and Petersburg areas most years; however, there were exceptions, and neither location was consistently deeper. Note that NRCS snow-depth data are coarse, with just one measurement collected each month per snow course.




Source: ADF&G graphic created using data from the Natural Resource Conservation Service (NRCS 2022)

**Figure 7. Average winter snow depth, Petersburg Ridge and Cropley Lake, Alaska, 1,650-feet elevation, February–March 1979–2022. Averages are based on one measurement per month.**

Patterns at mid-elevation NRCS weather stations (Petersburg Reservoir on Mitkof Island and Fish Creek on Douglas Island; Fig. 8) show no consistent pattern of one area having deeper snow than another. Snow was deeper at the Petersburg snow course than the Juneau snow course during 2017–2021, and well below the 10- to 12-inch threshold in 2019.




Source: ADF&G graphic created using data from the Natural Resource Conservation Service (NRCS 2022)

**Figure 8. Average winter snow depth, Petersburg Reservoir and Cropley Lake, Alaska, 500- to 550-feet elevation, February–March 1979–2022. Averages are based on one measurement per month.**

# Methods

Deer pellet-group surveys were conducted in Region I during April and May, after snow melt and before green up. The survey window varied from one unit to another, but generally followed a latitudinal gradient from the southern part of the region northward. Ideal survey timing is prior to leaf out when new deciduous plant growth is minimal. Leaf out follows an elevational gradient, so surveys were also timed to maximize snow-free ground at elevations up to 1,500 feet. Transect locations were selected based on various parameters, including habitat characteristics, harvest pressure, management concerns, and accessibility (Kirchhoff and Pitcher 1988). VCUs of higher priority were monitored every 1–3 years, and others less frequently, while some were surveyed just once to provide baseline data.

Survey locations were established in fixed locations within value comparison units (VCUs) for each unit. The goal was for each VCU to have 3–4 transects with 300 plots per transect. However, because of logistical difficulties, snow cover, or a lack of suitable terrain, fewer than 300 plots were sampled in some survey locations and years.

Transect locations were designed to maximize coverage of productive old-growth forest. Dangerous terrain features such as cliffs, rivers, and ravine crossings were avoided for safety. Transect bearing lines were designed to run perpendicular to elevational gradients to avoid sidehill travel. Transect start locations were designated by a specific tree at predetermined coordinates along a shoreline or road. That tree was marked with paint, flagging, and often a metal tag. Marks were left on trees after survey completion, and the same transect start locations were used each year. Start locations were reachable within 1 day, and accessible by vehicle, boat, or float plane. In general, allotted survey time for 1 transect was 6 hours total (there and back). Most transects targeted terrain that extended up to 1,500 feet in elevation within approximately 1 kilometer (0.6 mile) of the start location. Some transects were either flat or undulating and encompassed only lower elevations and a maximum distance of 2.5 km (1.6 miles; 125 plots [1 × 20 meters]).

Survey teams consisted of 6 people, with 1 team of 2 people for 3 transects per VCU. One surveyor hiked from the marked transect start tree and followed the predetermined compass bearing while pulling a 20-meter cable clipped to their belt. This cable defined the centerline of each 1 × 20-meter plot. A second surveyor notified the first surveyor when the cable was fully stretched between them, signaling to stop. The second surveyor then followed the cable uphill, counting pellet groups that fell within 0.5 meters on either side of the cable. Pellet groups were recorded as they were encountered in the field. Criteria for pellet groups that were partially within the 0.5 m cut-off point were counted and recorded when at least 50% of the pellet group fell within 0.5 m of the cable. Transects usually ended when the survey crew reached 1,500 feet in elevation, 125 plots were completed, survey crews encountered a geographic barrier they could not pass (e.g., raging river), or snow cover precluded pellet-group detection. Due to potential for missing pellet groups, if more than 50% of 3 consecutive plots were covered in snow, the survey effort was stopped. Survey effort, logistical difficulties, habitat changes, plant phenology, snow cover, and the degree of winter severity were also recorded.

Pellet-group densities were calculated as the mean number of pellet-groups per plot (MPGP) observed within each watershed. These data represent an index of overwinter density (not spring density), because surveys included all pellet groups on the landscape, including those deposited by deer that had died (deCalesta 2013).

Snow-depth was recorded at survey locations that did not have nearby NOAA weather stations. Snow depth was measured at muskeg sites only, where canopy would have little effect on relative snow depth. Maximum snow depth was recorded to the nearest inch for each winter date, October–May. Boards were between 4 and 8 feet tall, depending on the elevation at which they were placed. Trail cameras were used to collect several time-lapse photos per day. The maximum daily snow measurement was used to calculate average snow depth for each month of operation. If boards were buried by snow (a rare event), the maximum height of the board plus 1 inch was recorded for that day. Logistical difficulties such as camera malfunction or destruction of equipment by wildlife resulted in a lack of data for some survey locations in some years. Also, there were varying numbers of snow stations in different VCUs with just 1 snow station at some low-elevation sites and multiple snow stations at others (mid and high elevations). Average snow depth was calculated by month for low, mid, and/or high elevations. Missing data (due to fogged camera lens or whiteout conditions) for up to 1–3 days were interpolated from snow depths before and after missing data, taking into consideration snowfall and depth patterns at other nearby stations.

# Results and Discussion

## REGION I OVERVIEW

For the 30 watersheds surveyed during the 2017–2021 period, a summary of annual results is provided in Table 1. Due to complications associated with the COVID-19 pandemic, only 3 surveys were conducted in 2020 and only 1 survey was conducted in 2021.

Pellet-group densities can vary greatly but are generally denser on islands than the adjacent mainland due to better habitat and shallower snow depths. Pellet-group densities also tend to be higher where wolves are less abundant or absent, such as Unit 4.

Kirchhoff and Pitcher (1988) suggested that in Southeast Alaska, pellet-group densities reflect approximate categories of deer abundance, where densities of <0.50 should be considered very low, 0.50–0.99 low, 1.00–1.99 moderate, and 2.00–2.99 high. MPGP >2.99 are considered very high and are encountered in few areas of Region I.

During the 2017–2021 period, MPGP varied considerably among areas surveyed (Table 1). In Unit 1C, MPGP decreased from moderate to low on Douglas Island but were high elsewhere in the unit. In Unit 4, MPGP was very low on Pleasant Island, moderate near Kalinin Bay on Kruzof Island, and high to very high in the 8 other survey areas. In Unit 5A, MPGP were moderate. In Unit 3, MPGP was very low to moderate. In Unit 2, MPGP was moderate to high. In Unit 1A, MPGP were very low to low on the mainland and on Revillagigedo Islands, but moderate to high on Gravina Island. With the exception of Pleasant and Douglas islands, MPGP in Region I showed a stable or increasing trend during 2017–2021.

## UNIT 1A OVERVIEW

### Summary

Many VCUs that were surveyed historically in Unit 1A were discontinued due to timber harvest. Other watersheds were discontinued due to poor deer habitat or inclement boating weather. Recent pellet-group surveys have focused on Gravina Island and the Cleveland Peninsula.

**Table 1. Deer pellet-group survey results by location and survey year, Region I, Southeast Alaska, 2017–2021.**

| | | | Mean pellet-group density[3] by year | | | | |
|---|---|---|---|---|---|---|---|
| GMU[1] | VCU[2] | Name | 2017 | 2018 | 2019 | 2020 | 2021 |
| 1C | 35 | North Douglas | 0.98 | 0.82 | 1.19 | 0.57 | – |
| 1C | 36 | Inner Point | 1.16 | 1.12 | 0.85 | – | – |
| 1C | 94 | Sullivan Island | – | 2.09 | – | – | – |
| 1C | 124 | Shelter Island | 2.75 | – | 2.04 | – | – |
| 4Z | 125 | Barlow Cove | – | 2.38 | – | – | – |
| 4Z | 128 | Hawk Inlet | 2.13 | – | – | – | – |
| 4Z | 182 | Pybus Bay | – | – | 2.82 | – | – |
| 4Z | 185 | Pleasant Island | 0.12 | 0.00 | – | – | 0.00 |
| 4Z | 218 | Pavlof Harbor | – | – | 2.47 | – | – |
| 4Z | 247 | Finger Mountain | 4.28 | 3.61 | – | – | – |
| 4Z | 288 | Range Creek | 2.01 | – | – | – | – |
| 4Z | 298 | Kelp Bay | – | – | 2.44 | – | – |
| 4Z | 300 | Nakwasina | 3.76 | 3.24 | – | – | – |
| 4Z | 305 | Kalinin Bay | 1.91 | 1.46 | – | – | – |
| 5A | 368 | Yakutat Islands | – | 1.45 | – | – | – |
| 3Z | 435 | Castle River | – | 0.52 | – | – | – |
| 3Z | 437 | East Duncan | 1.01 | 1.25 | 1.17 | – | – |
| 3Z | 442 | Portage Bay | 0.40 | | 1.10 | – | – |
| 3Z | 448 | Mitkof Island | 1.02 | 1.77 | 1.21 | – | – |
| 2Z | 532 | Red Bay | – | 1.88 | 1.06 | – | – |
| 2Z | 554 | Sarkar | – | 1.44 | 1.32 | – | – |
| 2Z | 575 | Thorne Lake | – | 2.12 | 2.33 | – | – |
| 2Z | 578 | Snakey Lakes | – | 1.72 | 1.61 | – | – |
| 2Z | 621 | Twelvemile Arm | – | 1.57 | – | – | – |
| 1A | 716 | Helm Bay | 0.38 | – | 0.59 | – | – |
| 1A | 752 | Whitman Lake | – | – | – | 0.87 | |
| 1A | 763a | Bostwick Inlet | 1.63 | 1.20 | – | – | – |
| 1A | 763b | Bostwick Road | – | 1.42 | 1.68 | 1.80 | |
| 1A | 763c | All Bostwick[4] | – | 1.32 | – | – | – |
| 1A | 765 | Dall Head | 1.87 | 1.63 | 2.52 | – | – |

*Note*: En dashes indicate that no survey was conducted.
[1] Game Management Unit. Note that Z indicates that no subunit is specified.
[2] Value comparison unit (roughly the same as a watershed).
[3] Mean pellet-groups per plot (MPGP).
[4] Bostwick Inlet and Bostwick Road data combined.

Helm Bay (VCU 716)

PELLET-GROUP SURVEY RESULTS

This VCU is located on the Cleveland Peninsula mainland, northwest of Ketchikan. The area was intensively surveyed in 1981 and 3 permanent transects were established in 1984. Transect T1 is long, flat, and traverses extensive muskeg (Figs. 9 and 10) and scrub forest. Transects T2 and T3 each reach 1,500 feet in elevation and traverse medium-volume forest.


**Figure 9. Male sitka black-tailed deer sparring during the rut in a muskeg near Helm Bay, Cleveland Peninsula. ©2016 ADF&G.**


**Figure 10. Male deer in mid-elevation muskeg, Helm Bay, Cleveland Peninsula. ©2016 ADF&G.**

Over time pellet densities in this watershed (Fig. 11) have been variable, increasing from very low in 1981 (0.16 MPGP) to moderate by 1988 (1.66 MPGP). MPGP remained moderate until after 1995, then steadily decreased. Snowfall in southern Southeast Alaska in the winter of 1998–1999 was the most recorded in over 20 years. Pellet-group densities then remained at or below 0.25 pellet-groups per plot from 2004–2016, except in 2007, which was 0.50 MPGP.

Pellet-group densities during the 2017–2021 period increased more than 250% from 0.16 MPGP in 2015 to 0.59 MPGP in 2019. While densities are still in the moderate category and low compared to other areas in the region. The 2019 MPGP was the highest in this VCU since 1999, which is likely influenced by mild winters.

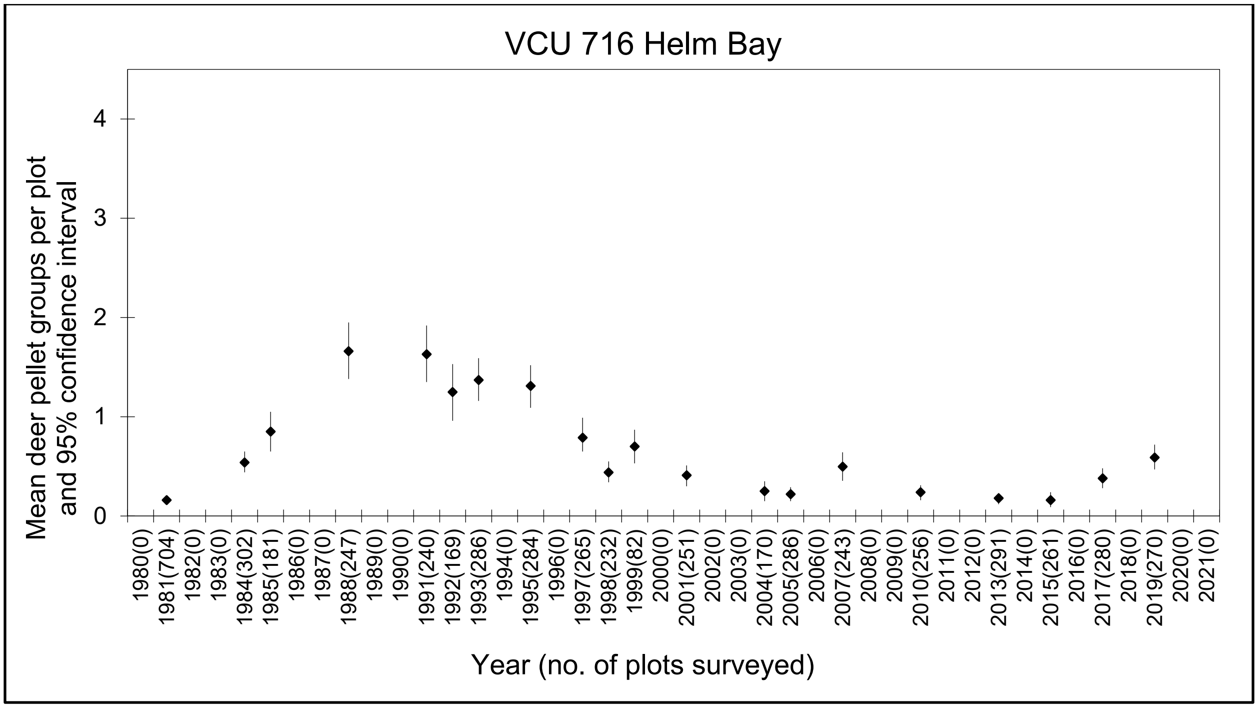



**Figure 11. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 716, Helm Bay, Cleveland Peninsula, 1980–2021.**

HELM BAY AREA LOCAL SNOW TRENDS

Snow stations were placed on the slopes southwest of Helm Bay (Fig. 12), near pellet-group transect locations. Snow depths in this mainland area were similar to those on Gravina Island.

**Figure 12. High-elevation snow station, Helm Bay, Cleveland Peninsula, Alaska. ©2016 ADF&G.**

During the 2015–2016 and 2018–2019 winters, snow depths were very low, even at high elevations (1,935–1,950 feet; Fig. 13). Snow was deeper at the mid elevation station (445 feet) during the 2019–2020 and 2020–2021 winters, with particularly heavy snow toward the end of the 2020–2021 winter. Mid-elevation daily snow depths exceeded 11 inches most days during February–April 2021. In contrast, low elevation snow depths did not surpass 10 inches.

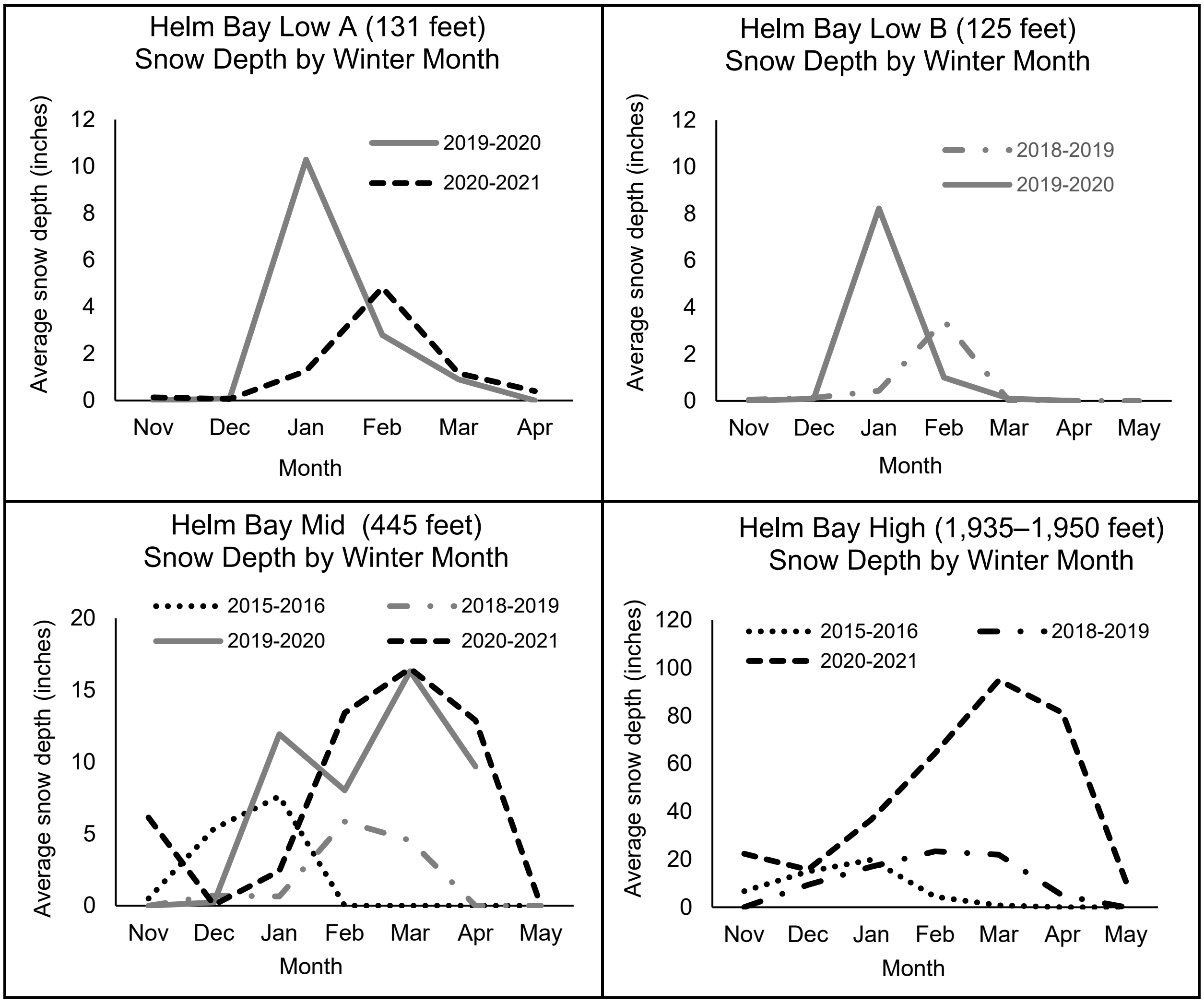



**Figure 13. Average snow depth at value comparison unit (VCU) 716, Helm Bay area, Alaska.**

## Whitman Lake (VCU 752)

### PELLET-GROUP SURVEY RESULTS

This VCU is located on the road system south of Ketchikan on Revillagigedo Island and was first sampled in 1981. This area is easily accessed by Ketchikan hunters. It was surveyed 5 times between 1981 and 1998, primarily when inclement weather prohibited airplane or boat transport to other survey areas. All 3 transects reach 1,500 feet elevation on south-facing slopes and traverse primarily low-volume, old-growth, noncommercial forest. Deer pellet-group density has consistently been low, less than 1 pellet-group per plot (Fig. 14). Surveys in this area were discontinued for over 2 decades due the need to prioritize more productive areas with more hunting pressure.

Whiteman Lake was surveyed once during the 2017–2021 period, in 2020, for the first time in over 20 years. The pellet-group density in 2020 was 0.87 MPGP, which is similar to the 1997 MGPG of 0.81, and on the upper end of historical MPGP for this VCU.

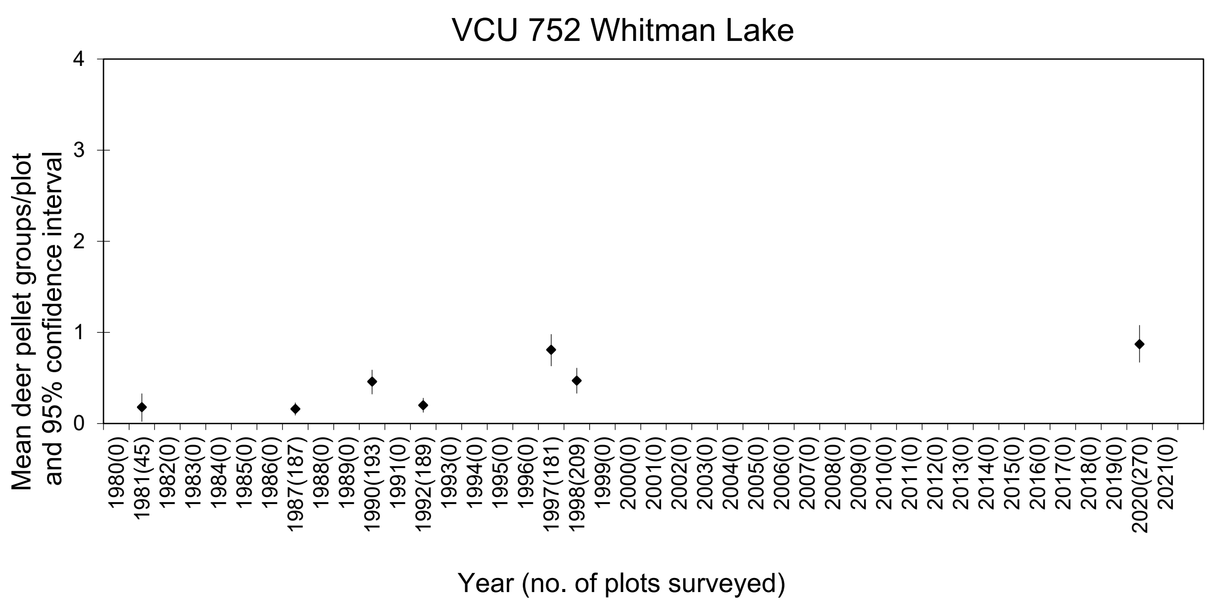



**Figure 14. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 752, Whitman Lake, Revillagigedo Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

## Bostwick Inlet (VCU 763a)

### PELLET-GROUP SURVEY RESULTS

**Figure 15. Transect 1 (T1), Bostwick Inlet, Southeast Alaska. ©2015 ADF&G**

A new survey area was established in the Bostwick Inlet area in 2015 (Fig. 15). This area has some of the best remaining deer habitat on Gravina Island. Transects T1 and T2 rise to 1,500 feet over the course of 70–80 plots, while T3 rises to 1,300 feet over 125 plots. MPGP in this area are similar to VCU 765 (Dall Head; Table 1). During the 2017–2021 period, pellet-group densities in 2017 (1.63 MPGP) and 2018 (1.20 MPGP) represented a sharp increase from the 2016 survey (0.60 MPGP; Table 1, Fig. 16).

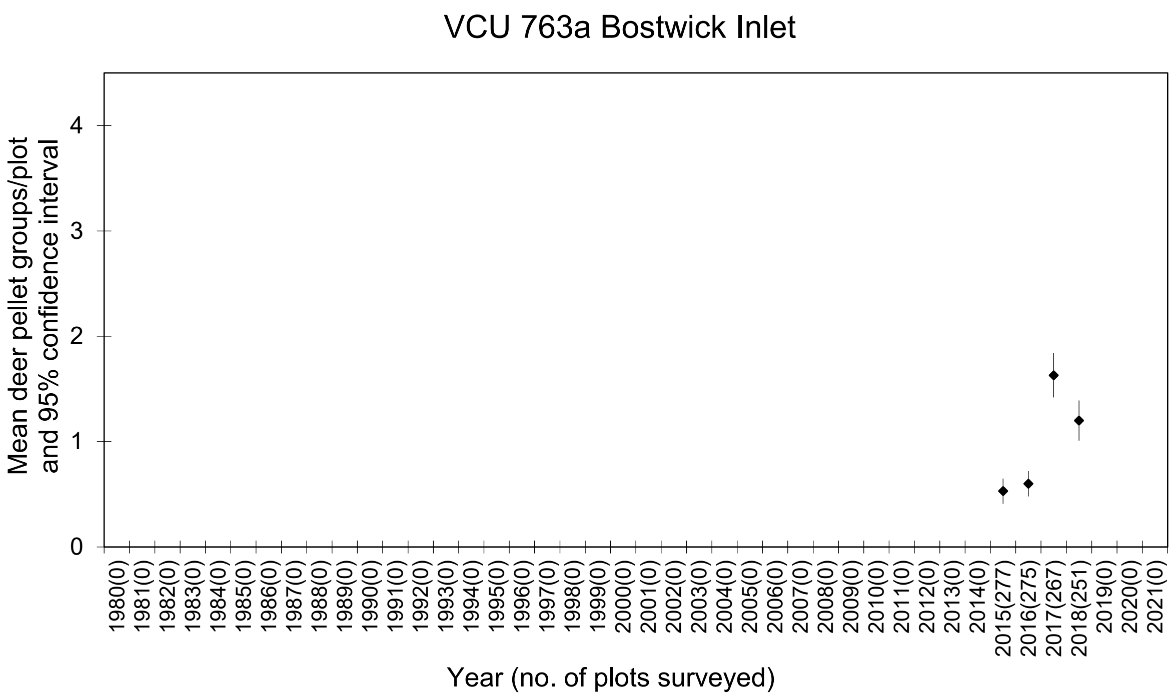



**Figure 16. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 763a, Bostwick Inlet area, Gravina Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

### Bostwick Inlet Area Local Snow Trends

Snow measurement stations were placed at low, medium, and high elevations within VCU 763a, Bostwick Inlet (Fig. 17). Snow depths at Bostwick Inlet (Fig. 18) were similar to those in the Bostwick Road area (VCU 763b. In contrast to Helm Bay (445 feet), snow was not very deep in Bostwick Inlet during the 2020–2021 winter.

**Figure 17. Deer in deep snow at Bostwick Inlet mid-elevation snow station. ©2020 ADF&G.**

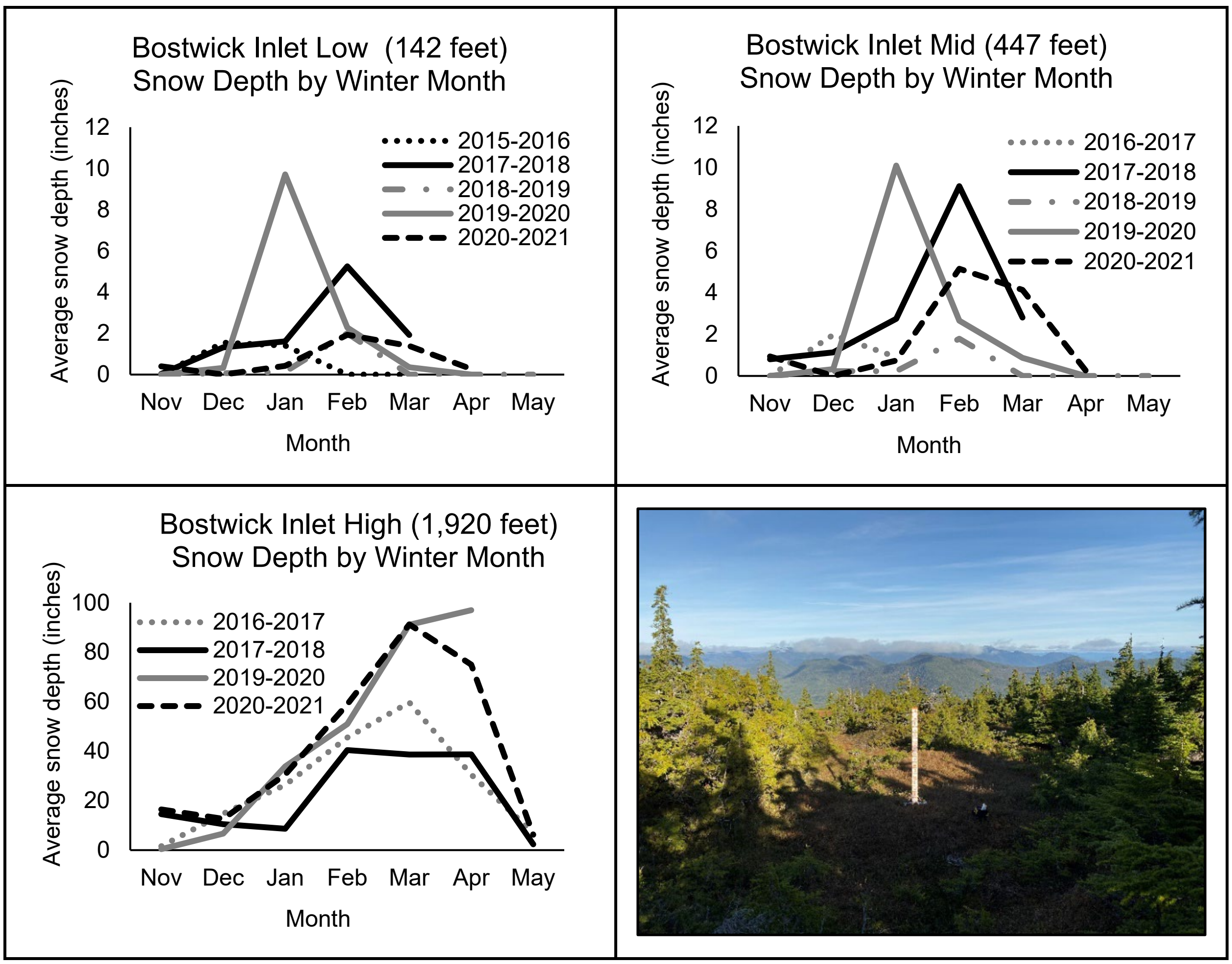



**Figure 18. Average snow depth at value comparison unit (VCU) 763a, Bostwick Inlet Area, Gravina Island. Photo of high-elevation snow station. ©2018 ADF&G.**

## Bostwick Road (VCU 763b)

### PELLET-GROUP SURVEY RESULTS

In 2018, 3 transects (T1, T2, T3) were established on the Bostwick Road system to provide road access when weather conditions precluded boating. Transect T3 was replaced by T4 in 2019 because a road closure that made access to T3 logistically difficult. Transects T1 and T2 start near a road at approximately 200–300 feet in elevation, drop down to a river crossing, then rise to approximately 1,000 feet in elevation. Transect T4 is flatter and slightly undulating, ranging from approximately 100 to 400 feet in elevation. Fewer plots were surveyed in 2019 because high water prevented some river crossings. Much of the survey area consists of low-volume forest and muskeg (both forested and unforested). Pellet-group densities in 2018 (1.42 MPGP), 2019 (1.68 MPGP), and 2020 (1.80 MPGP) were consistently in the moderate pellet-group category (Fig. 19, Table 1) and similar to those in the Bostwick Inlet area (VCU 763a, Fig. 16).

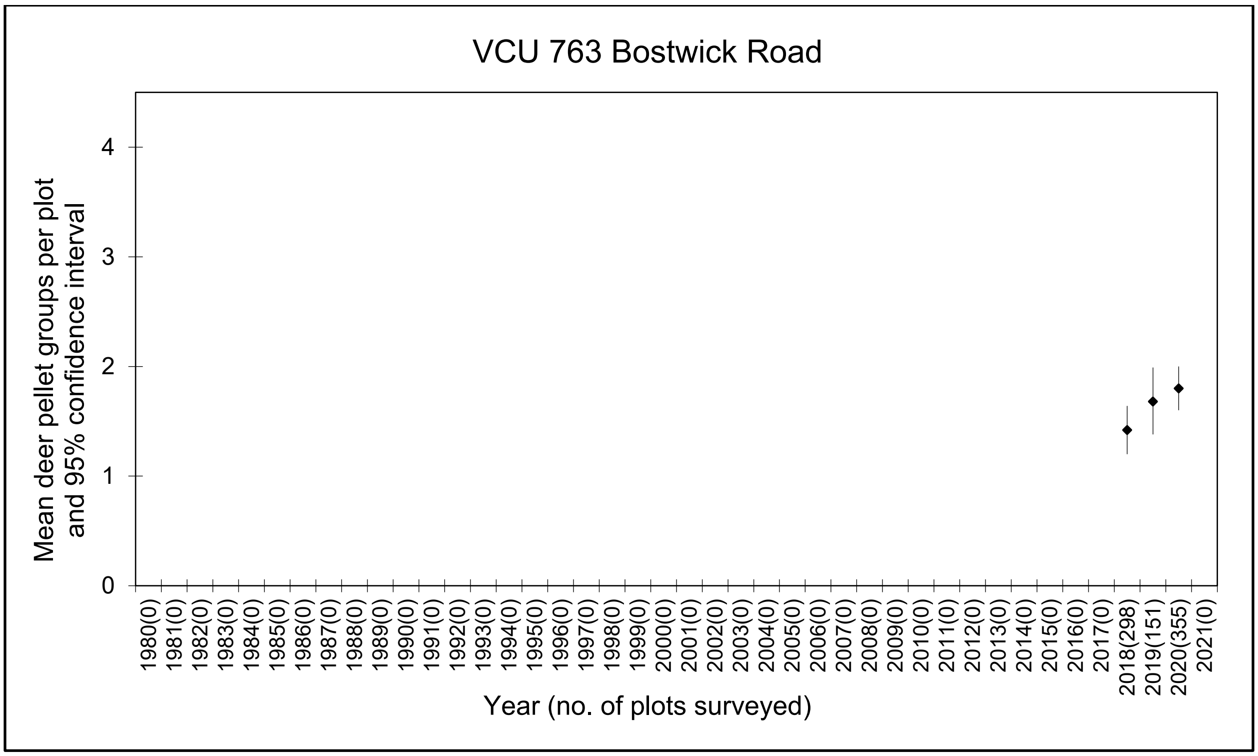



**Figure 19. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 763b, Bostwick Road, Gravina Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

## Bostwick Road Area Local Snow Trends

In the Bostwick Road area, temporary snow measurement stations were placed at low, medium, and high elevations within VCU 763b, on the slopes west of the Bostwick Road system. Conditions were generally mild during the winters in which data were successfully recorded (Fig. 20). 2017–2018 winter snow depths were similar to those at Bostwick Inlet (Fig. 18).

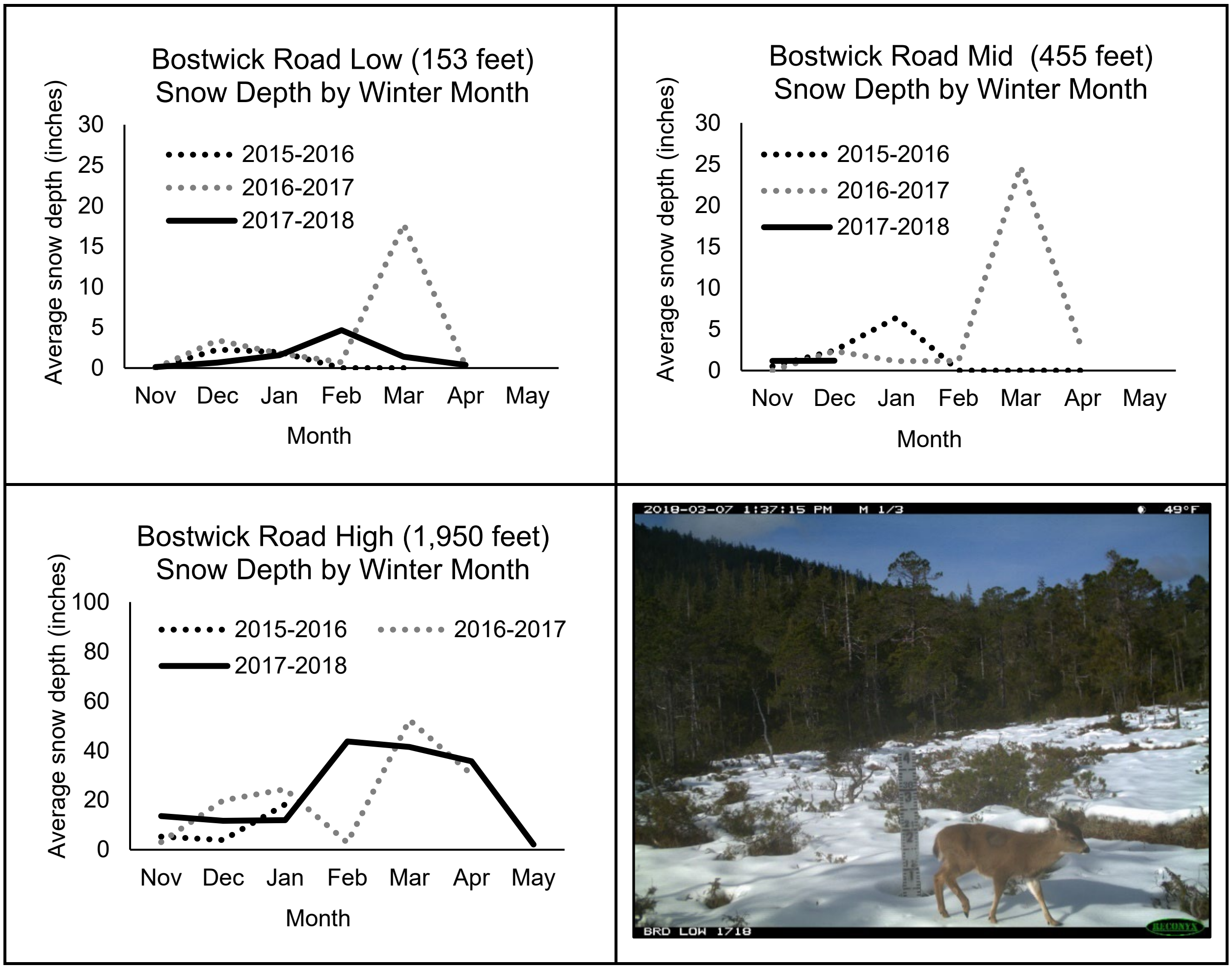



**Figure 20. Average snow depth at value comparison unit (VCU) 763b, Bostwick Road Area, Gravina Island. Photo demonstrates Sitka black-tailed deer walking across compacted, crusted snow surface at low elevation station. ©2018 ADF&G**

## Dall Head (VCU 765)

### PELLET-GROUP SURVEY RESULTS

This watershed on the southern end of Gravina Island is primarily low elevation with some precipitous slopes (Fig. 21) and is characterized by predominantly low-volume old-growth forest, with patches of high-volume forest (Fig. 22). A single transect was first sampled in this area in 1981 (Fig. 23), but the exact location is unknown. Three permanent transects were established in 1996. Two of the 3 transects are entirely low elevation and show evidence of significant fire events. The effects of fire and windthrown trees have resulted in areas of second growth forest and red cedar stands. Low-volume old growth predominates, with a significant amount of salal compared to other survey areas. Higher volume forest occurs more commonly at higher elevations.

Dall Head is typically surveyed annually due to its popularity with Ketchikan hunters. During the 2017–2021 period, pellet-group densities more than tripled compared to low densities of previous years (2015 MPGP = 0.53). Moderate densities were recorded in 2017 (1.87 MPGP), and 2018 (1.63 MPGP). MPGP reached a high density in 2019 (2.52 MPGP). MPGP were the highest ever recorded during the 2017–2021 period in Unit 1A.

**Figure 21. Aerial view of Dall Head survey area, Gravina Island. ©2019 ADF&G.**

**Figure 22. High-volume forest near Transect T2 start tree, Dall Head survey area. Photo of Micah Sanguinetti, ADF&G. ©2017 ADF&G.**

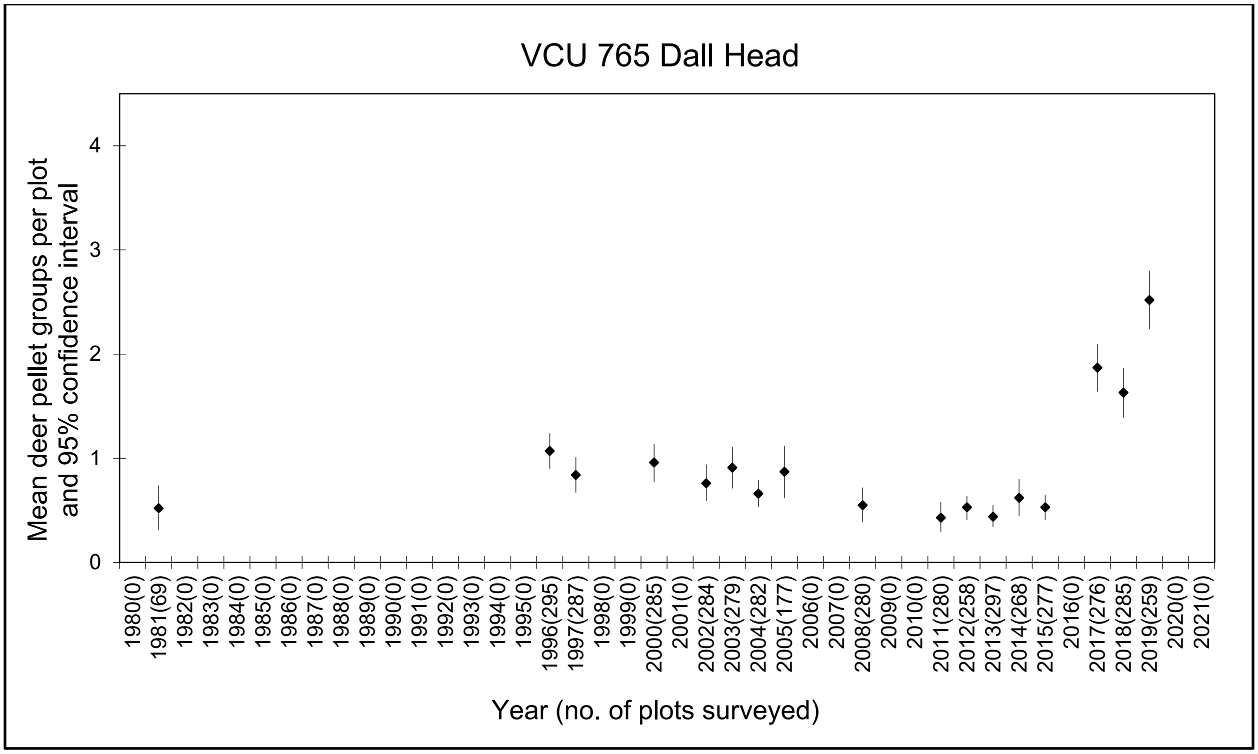



**Figure 23. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 765, Dall Head area, Gravina Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

## Dall Head Area Local Snow Trends

High-elevation snow-board stations were not deployed in VCU 765 due to a lack of suitable muskeg on steep slopes. One station was placed at low elevation within VCU 765, near the coast and adjacent to Transect 3 (Fig. 24). VCU 765 received little snow at low elevations compared to other stations in the region.

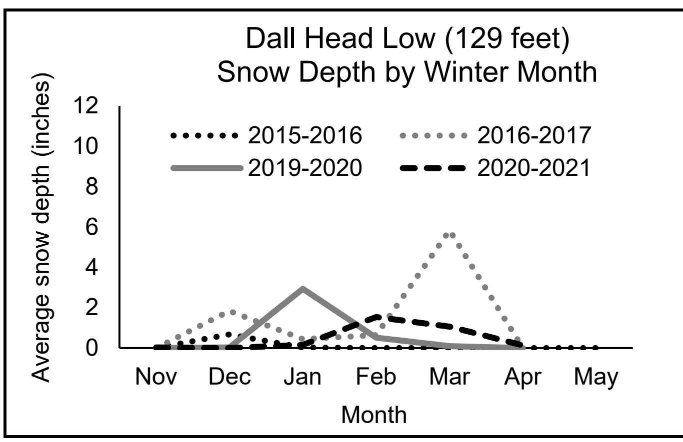



**Figure 24. Average snow depth at value comparison unit (VCU) 765, Dall Head Area, Gravina Island. Photo of low elevation snow station. ©2018 ADF&G.**

## UNIT 1C OVERVIEW

### Summary

Four Unit 1C VCUs were surveyed during 2017–2021, 2 of which are on Douglas Island (VCUs 35 and 36). VCU 35 is located on the North Douglas road system and VCU 36 is located near Inner Point on the west side of Douglas Island. Both of these VCUs were surveyed during 2017–2019, VCU 35 was surveyed in 2020, and neither were surveyed in 2021 (Table 1). Pellet-group densities in both watersheds started to increase between 2003 and 2005, and then decreased after 2007 (VCU 36) or 2008 (VCU 35).

MPGP in VCU 35 fell 63% from 2.84 in 2008 to 1.06 in 2010. There was a quicker, but lower magnitude decline in VCU 36, with MPGP falling 38% from 2.32 in 2006 to 1.44 in 2009. Deer pellet-group densities decreased again after 2013. Overall, there is a decreasing trend in MPGP on Douglas Island.

VCU 94, located near the northern boundary of Unit 1C on Sullivan Island, was surveyed once during 2017–2021 and only 4 times total since the first survey in 1990. The fourth watershed, VCU 124 on Shelter Island, was surveyed twice during 2017–2021. Pellet-group densities are at the upper end of their historic range in both VCUs. The 2018 pellet-group count on Sullivan Island was the highest ever recorded, and the 2017 count in on Shelter Island was the fourth highest ever recorded.

### North Douglas (VCU 35)

#### PELLET-GROUP SURVEY RESULTS

Douglas Island is located within the City and Borough of Juneau and is heavily used by Juneau hunters. Three transects (T1, T2, and T3) were originally established on the road system in 1991, which traverse medium-volume forest. Transects T1 and T2 rise to 1,500 feet in elevation, while T3 maxes out at about 800 feet elevation. In 2005, last-minute crew shortages precluded surveying Transect T2. In 2007, fewer plots were surveyed because crews terminated transects early after encountering substantial snow between 700 and 850 feet in elevation; note that 2007 estimates may be skewed high due to a lack of high-elevation coverage. A new road was constructed in 2017 that bisects Transect T3, and due to the need to circle around a gravel pit, it was difficult to maintain a straight-line transect in 2018. A new transect location (T4) was created in 2019 and surveyed instead of T3, but T4 was determined to be too cliffy and the survey and was terminated early. Because higher elevations were not included, the 2019 estimate may be inflated. In 2020, crews returned to surveying T1–T3. However, due to COVID-related concerns, the timing of the 2020 survey was late (weeks later in June), when green up was very advanced. As a result, pellet-group detectability was decreased.

MPGP was variable in this VCU, increasing steadily during 2002–2008, then decreasing through 2020 (Fig. 25). During 2017–2021, deer were at low densities. The 2020 MPGP (0.57) was 52% lower than the 2019 MPGP (1.19), although the 2019 MPGP may have been inflated because high elevations were not surveyed in Transect T3. The 2020 MPGP is 30% lower than the 2018

MPGP; however, advanced leaf out during the 2020 survey may have decreased detectability and biased MPGP low.

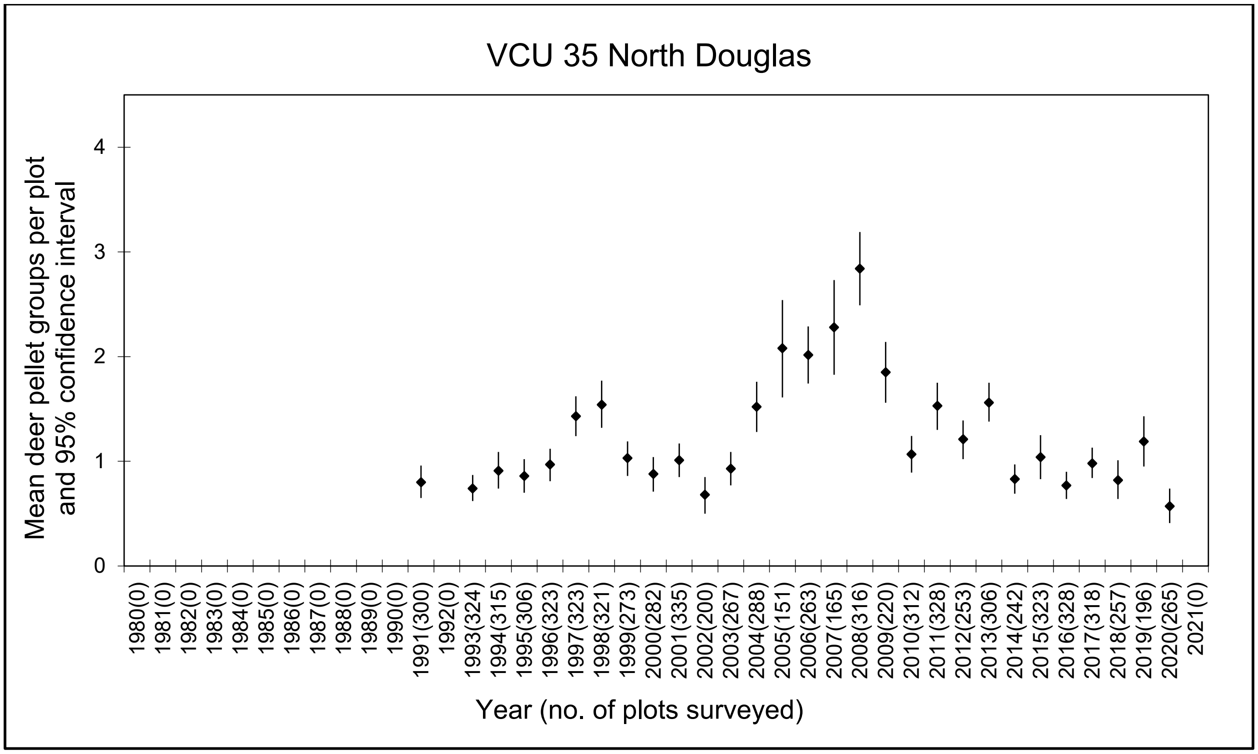



**Figure 25. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 35, North Douglas Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

North Douglas Area Local Snow Trends

North Douglas Island received substantially more snow at low-elevation stations (Fig. 26) than Unit 1A at Helm Bay and Bostwick Inlet during 2020–2021. In early November 2020, snow depths were greater than 11 inches for 10 days. Snow depths decreased to zero by the end of November 2020, then increased at the end of January to 10 inches until mid-March, when snow depths ranged from 12 to 21 inches until mid-April (Fig. 26). Snow deposition patterns were similar to those recorded on Shelter Island (VCU 124 in Unit 1C).

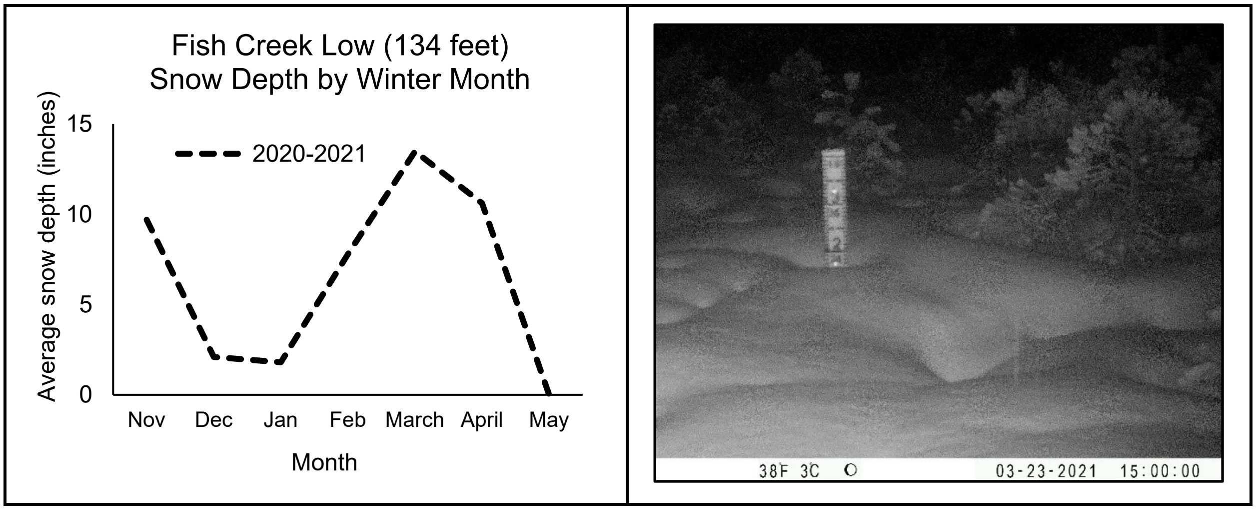



**Figure 26. Average snow depth at value comparison unit (VCU) 35, Eagle Crest Road area, North Douglas Island. Photo on right shows the Eaglecrest Road low-elevation (145-feet elevation) snow station with almost 2 feet of snow. ©2021 ADF&G.**

## Inner Point, Douglas (VCU 36)

### PELLET-GROUP SURVEY RESULTS

This drainage, located on the west side of Douglas Island, is typically surveyed annually due to its popularity with Juneau deer hunters. However, because of high wind and sea conditions in Stephens Passage, access is sometimes difficult. This is a small VCU containing mostly low-volume forest, which is particularly brushy at lower elevations. Two transects (T1, T3) rise from sea level to 1,500 feet, while the third (T2), is low elevation and consists of 125 plots rising to approximately 400 feet. The area was not surveyed in 2005 due to inclement weather. Only Transects T1 and T3 were completed in 2006 due to staffing issues. In 2007, all transects were surveyed but T2 was terminated early due to illness, resulting in fewer plots surveyed.

Like VCU 35 (North Douglas), pellet-group densities have historically fluctuated between low and high categories (Fig. 27). MPGP counts were generally higher in VCU 36 than 35 during the early 1990s, but similar during the early 2000s. In 2006, the MPGP was 2.33 for VCU 36 (high-density category). This was following the mild winter of 2005–2006 (Fig. 3; NOAA 2022). The MPGP decreased to the moderate category after 2007. The reduction in MPGP occurred a year earlier in VCU 36 than 35 (North Douglas). MPGP rebounded quickly to the high pellet-group category by 2013 (2.41 MPGP), but then decreased again to moderate levels. During the 2017–2021 period, MPGP decreased slightly from moderate density in 2017 (1.16 MPGP) and 2018 (1.12 MPGP) to a low density in 2019 (0.85 MPGP), despite a long series of mild winters (Table 1).

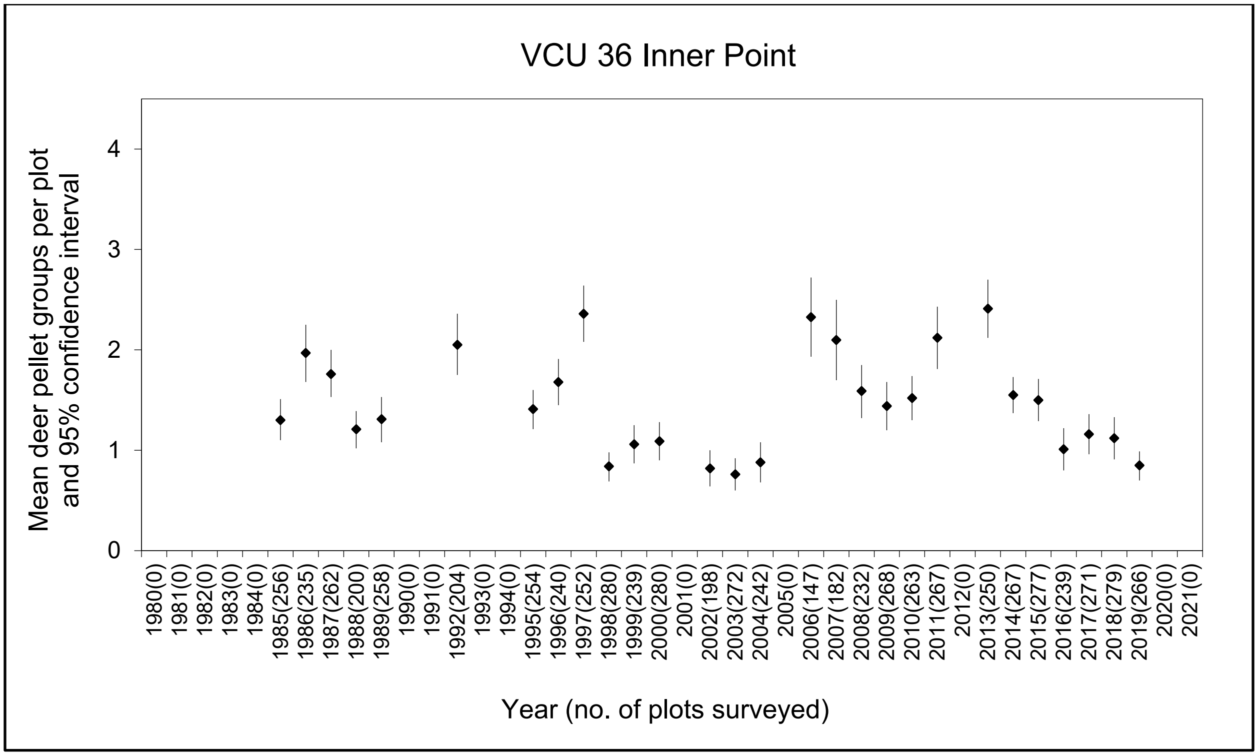



**Figure 27. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 36, Inner Point area, west side of Douglas Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

## Sullivan Island (VCU 94)

### PELLET-GROUP SURVEY RESULTS

Transects were established on Sullivan Island in 1990 to monitor the status of deer descended from transplants 1951–1954 (Paul 2009). Located in upper Lynn Canal at the northern boundary of Unit 1C, Sullivan Island is 8 miles long with a peak elevation of 1,030 feet. Located 15 miles south of Haines, it supports the only huntable deer population in the area. There have been numerous sightings of mule deer in the Skagway area in recent years, but they have not been reported this far south; therefore, during 2017–2021 sympatry is thought to be unlikely.

**Figure 28. Transect T1 start tree and deer habitat, Sullivan Island, Alaska. ©2018 ADF&G**

Transect T1 is a midpoint on the east side of the island and extends to the highest peak through medium and high-volume timber with an open understory (Fig. 28). T2 and T3 are located at the heads of the 2 bays on the south end of the island, within Sullivan Island State Marine Park. Both traverse lowland terrain with dense undergrowth before climbing into higher volume timber. Transects were occasionally terminated due to time constraints because survey crews were based in Juneau, which is about an hour travel time by boat.

VCU 94 was surveyed once during 2017–2021, which was the fourth survey ever conducted in this watershed (Fig. 29, Table 1). The pellet-group density in 2018 was 2.09 MPGP, which was the first and only MPGP for this VCU in the high category. It was almost double the previous MPGP from 2016 (1.08 MPGP). Deer densities on Sullivan were similar to those observed on Shelter Island.

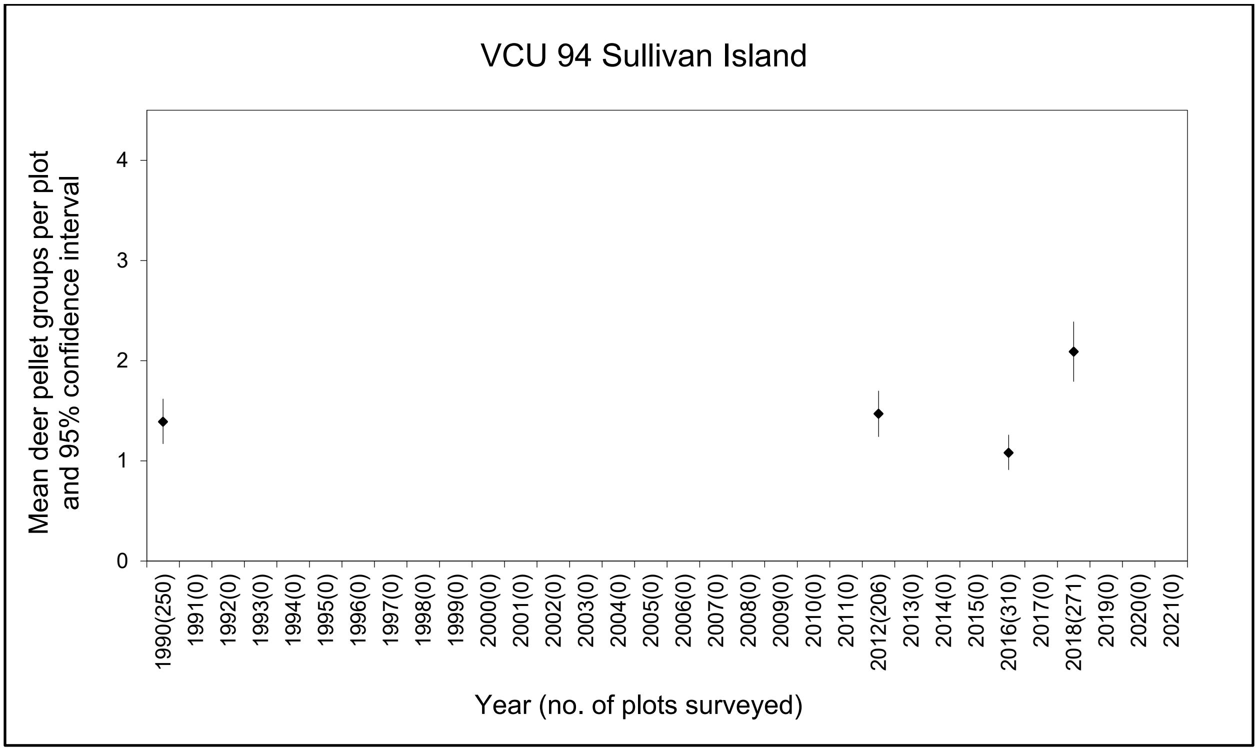



**Figure 29. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 94, Sullivan Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

<u>Shelter Island (VCU 124)</u>

PELLET-GROUP SURVEY RESULTS

Located north of Juneau in the lower Lynn Canal, VCU 124 is composed of Shelter and Lincoln islands and is a popular destination for Juneau hunters. Shelter Island, the larger of the 2 islands in this VCU, is primarily forested with a maximum elevation of 1,170 feet on the northern end. This VCU was sampled intensively from 1984 to 1986, but this practice was discontinued in 1987 because most of the south end is private property with numerous cabins. Pellet-group densities presented in Fig. 30 reflect data collected from Transects T4–T8 and T18 only. These transects were selected due to accessibility, and the ability to complete them in 1 day with a 6-person crew. Because the island is narrow, each transect is relatively short. Each crew surveyed 1 transect, then hiked to the nearby start location of the next transect, completing 2 transects per day.

Historically, pellet-group densities in this watershed were moderate to high, even reaching the extremely high category in some years. MPGP increased to the moderate category by 2010 and continued to increase thereafter.

Shelter Island was surveyed twice during 2017–2021, in 2017 (2.75 MPGP) and 2019 (2.04 MPGP); both MPGP were within the high pellet-group density category.

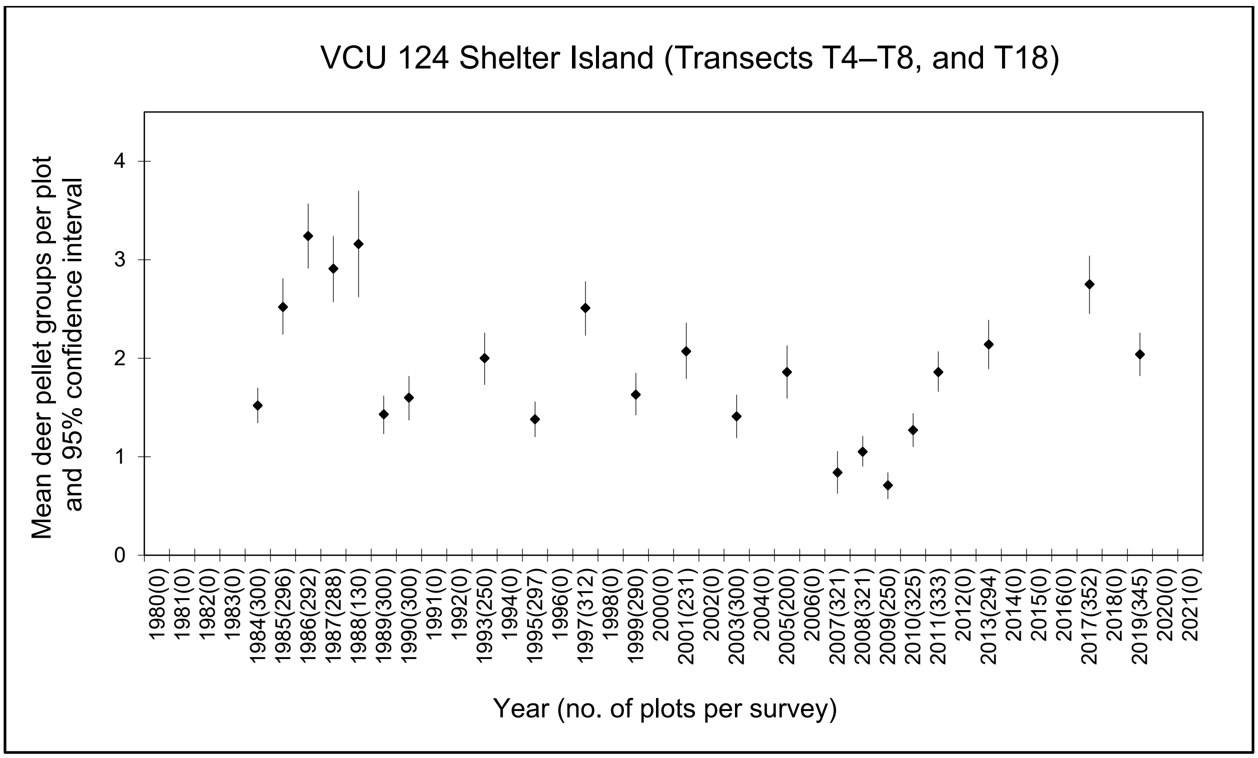
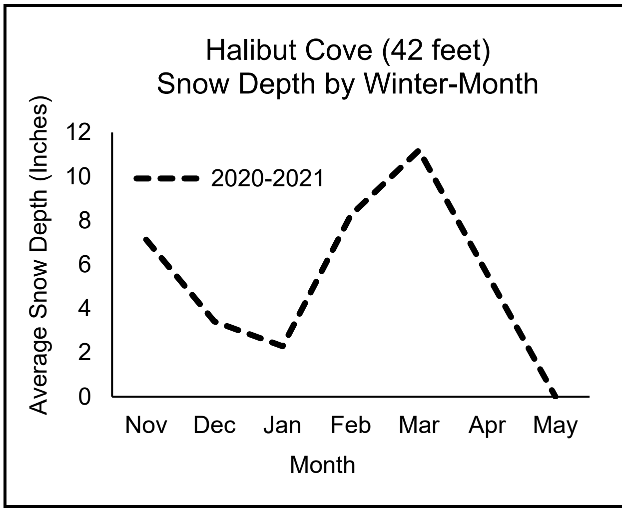



**Figure 30. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 124, Shelter Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

SHELTER ISLAND AREA LOCAL SNOW TRENDS

Within VCU 124, only 1 snow measurement station was placed at low elevation, near a Shelter Island pellet-group survey transect location by Halibut Cove (Fig. 31). In the winter of 2020–2021, low-elevation snow-deposition patterns near Halibut Cove were similar to those near Fish Creek, North Douglas Island (see VCU 35, Fig. 26).



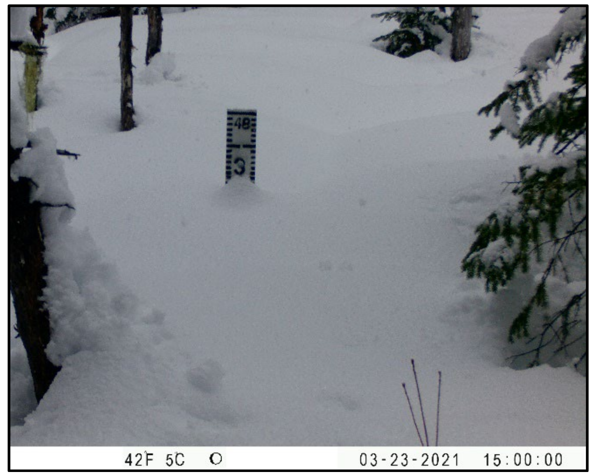




**Figure 31. Average snow depth at value comparison unit (VCU) 124, near Halibut Cove, Shelter Island. Photo of Halibut Cove, low-elevation snow station with 3 feet of snow. ©2021 ADF&G.**

## UNIT 2 OVERVIEW

### Summary

While there can be variability among VCUs, snowfall recorded on Prince of Wales Island was generally at or below average (Fig 4, NOAA 2022) during 2017–2021. Mean pellet-groups per plot in Unit 2 remained at the upper end of their historic range. During the 2017–2021 period, pellet-group densities in Unit 2 were in the moderate to high pellet-group density range. Thorne Lake and Twelvemile Arm were in the high pellet-group density category in both 2018 and 2019.

### Red Bay (VCU 532)

PELLET-GROUP SURVEY RESULTS

Located on northern Prince of Wales Island, this VCU was first sampled in 1987. Red Bay has been extensively logged, and in 2001 and 2002, new transects (T4, T5, and T6) were added to existing Transects T1, T2, and T3, to avoid second-growth forest. T4 primarily traverses muskeg and scrub forest (Fig. 32), and originally extended into a clearcut after 80 plots. The compass bearing was changed in 2018 to avoid the clearcut; the number of plots remained similar. Transect T5 traverses steep old growth and crosses 2 rivers, ending at 90 plots. T6 traverses muskeg, windthrown trees, and old growth.

Pellet-group counts during the 2017–2021 period (Fig. 33) were similar to those reported in the past, with the 2018 count (1.88 MPGP) being the highest on record. The increased count in 2018 coincided with a slight bearing change to better avoid clearcuts and cliffy terrain. There were also slight differences in habitat and detectability of pellet-groups. In addition, both T5 and T6 have second-growth forest and windthrown trees. This can lead to greater variation in detectability from year to year depending on the specific route taken by survey crews through the thick vegetation, and whether that route encountered higher-use deer trails. The 2019 count (1.06 MPGP) was similar to the 2015 count (1.05 MPGP).

**Figure 32. Muskeg and scrub forest on a deer pellet-group survey in VCU 532, Red Bay, Prince of Wales, Alaska. Photo of Jenell de la Peña, ADF&G. ©2019 ADF&G.**

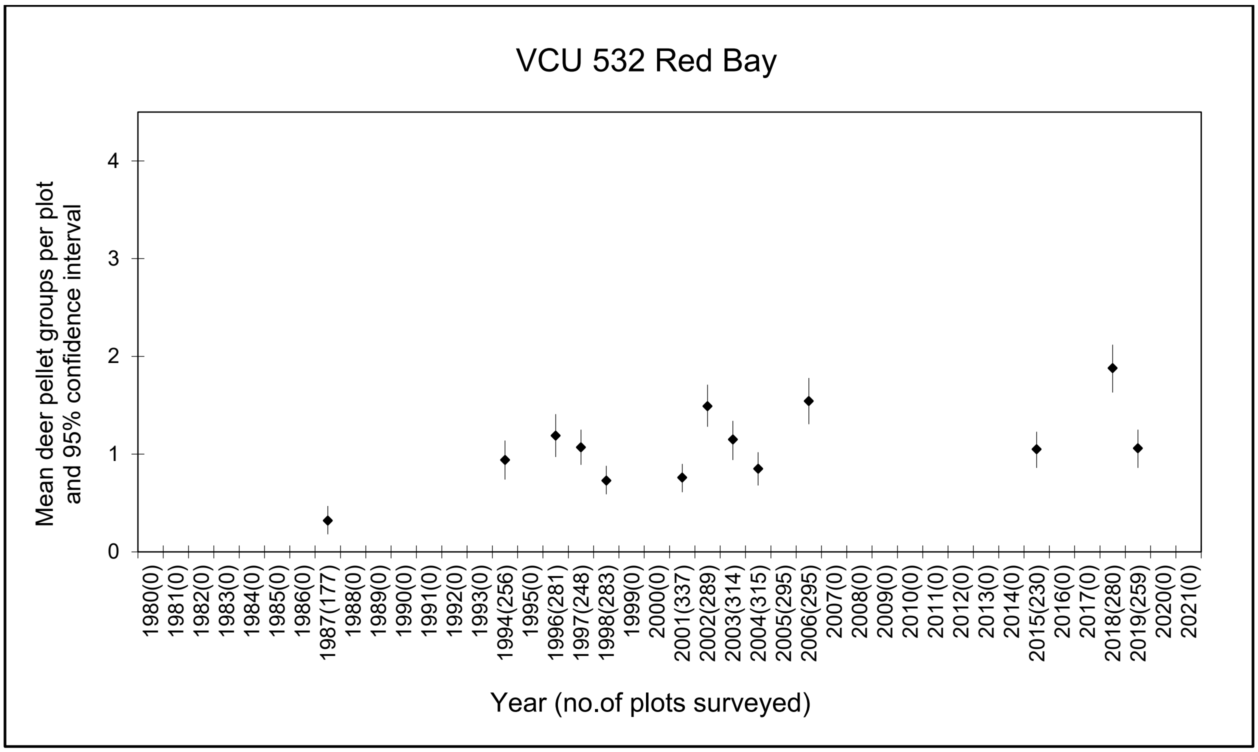



**Figure 33. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 532, Red Bay area, Prince of Wales Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

## Sarkar (VCU 554)

### Pellet-Group Survey Results

**Figure 34. River crossing on Transect T2 near Sarkar Lake, Prince of Wales, Alaska. ©2019 ADF&G.**

Three transects were established at Sarkar Lake on Prince of Wales Island in 1989. All 3 transects start at the Sarkar Rapids bridge. T1 and T3 travel through a combination of old-growth and second-growth forest, some of which is very dense and difficult to traverse. Transect T2 starts at the same tree as T1, is mostly flat, and consists primarily of old-growth forest with windthrown trees and thickets of *Vaccinium* spp., as well as some river crossings (Fig. 34). In 2001, T4 was created to replace T3 due to second-growth forest, and T1, T2, and T4 were surveyed. In 2002 T2, T4, and T5 were surveyed; and T5 was created to replace T1. In 2003–2018, T4 was abandoned and T1, T2, and T5 were surveyed. In 2018 T6 was created and surveyed to provide an additional option in place of T1, which ended after 45 plots (when it reached second growth forest). In 2019, surveys included T2, T5, and T6 only. T6 is a relatively flat transect with good winter range that starts at the road and runs approximately 110 plots before reaching the shore.

Mean pellet-groups per plot (MPGP) trends decreased from moderate in 1988 and 1992 to low from 1994 to 2004. MPGP then increased from very-low density in 1998 (0.29 MPGP) to high density in 2011 (2.24 MPGP). MPGP stabilized at moderate density from 2015 through the 2017–2021 period (Fig. 35). Pellet densities in 2018 (1.44 MPGP) and 2019 (1.32 MPGP; Table 1) remained at moderate levels at the upper end of their historic range, and similar to that of 2015 (1.38 MPGP, Fig. 35).

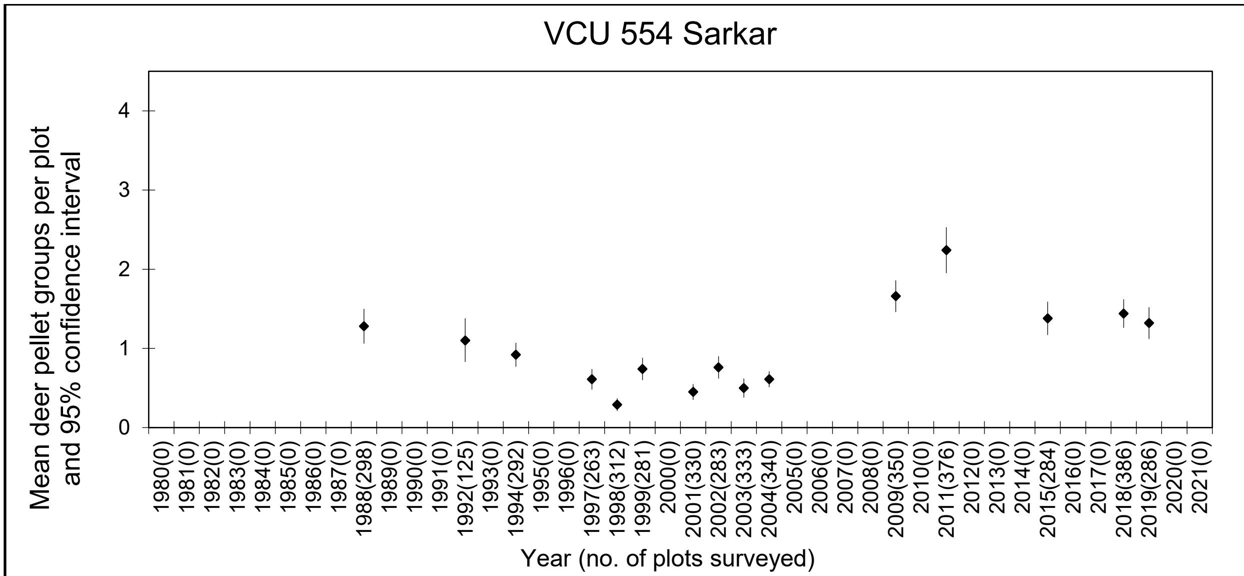



**Figure 35. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 554, Sarkar area, Prince of Wales Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

## Thorne Lake (VCU 575)

### PELLET-GROUP SURVEY RESULTS

The Thorne Lake and Thorne River drainage is located in the central part of Prince of Wales Island. Prior to 1992, 3 transects were sampled as part of VCU 575. Surveyors were unable to complete surveys on these transects, so after 1992 they were replaced with 4 new transects. All 4 transects started along USFS Road 3015 and were accessed by vehicle from Thorne Bay. Transect T1 (Fig. 36) is mostly red-cedar, western-hemlock overstory, and blueberry understory, with some small cliffy sections. Transect T2 starts in muskeg and low-volume forest (Fig. 37), passes through a series of wet meadows, and then skirts a clearcut. Transect T4 is a steep steady climb to 1,500 feet, with the first half dominated by red cedar and the second half by high-volume spruce-hemlock forest. A new start location was established for Transect T2 in 1994 due to logging, which still reached the edge of a clearcut. Transects T1, T2, and T3 were sampled in 2000, 2006, and 2019; T2, T3, and T4 were surveyed in 1999, 2004, and 2007; T3 and T4 were sampled in 2003.

**Figure 36. Cliff in Transect T1, Thorne Lake, Prince of Wales, Alaska. Photo of Maddy Kombrink, ADF&G. ©2018 ADF&G.**

**Figure 37. Muskeg in Transect T2, Thorne Lake, Prince of Wales Island, Alaska. Photo of Karin McCoy. ©2019 ADF&G.**

Pellet-group densities in this watershed (Fig. 38) increased during the 2000s from low density in 2001 (0.53 MPGP) to moderate density in 2015 (1.85 MPGP). During 2017–2021 densities were in the high category, at the upper end of their historic range, and reached the highest MPGP ever recorded for this watershed in 2019 (2.33 MPGP).

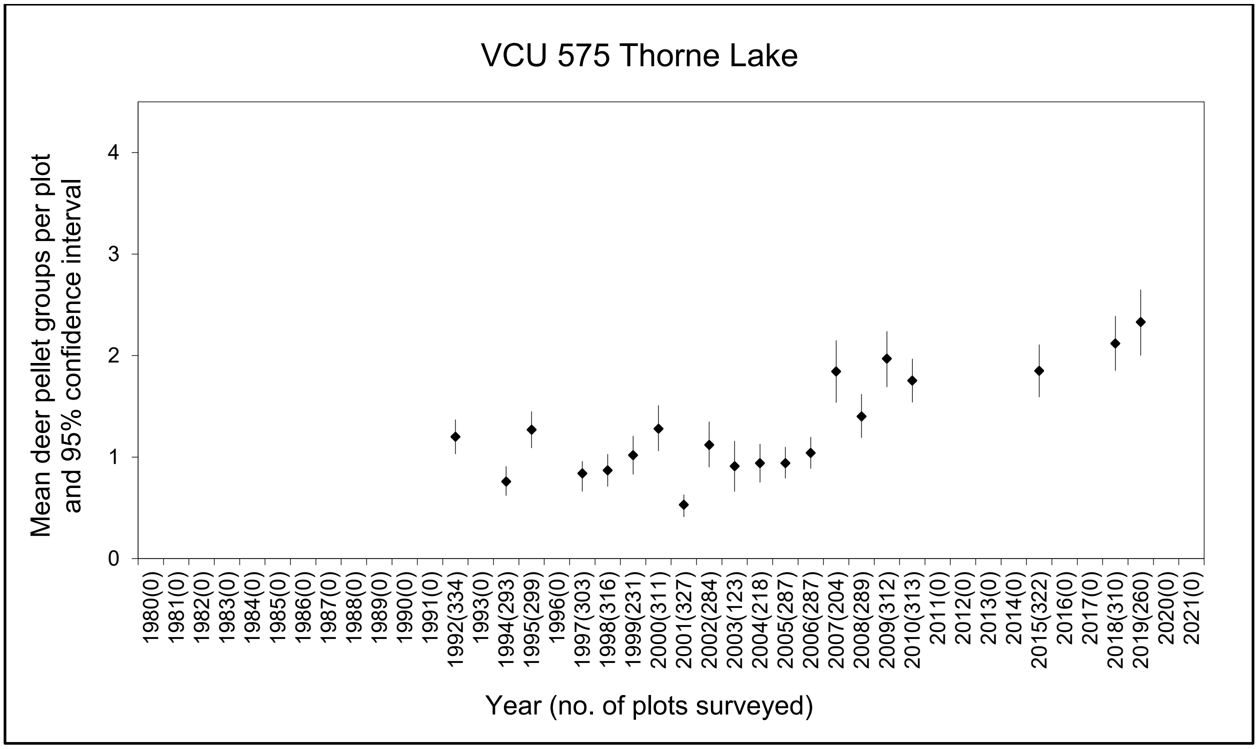



**Figure 38. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 575, Thorne Lake area, Prince of Wales Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

## Snakey Lakes (VCU 578)

### Pellet-Group Survey Results

Four transects (T1, T2, T3, T4) were established off the road system by USFS in this VCU in 1986. This is an inland VCU with excellent habitat for a variety of wildlife (Fig. 39), located in the Thorne River drainage of Prince of Wales Island. MPGP densities have been relatively stable in this VCU, despite periodic deep-snow winters and logging activity which made it difficult to complete all transects every year. Several transects were logged and had to be replaced.

Due to logging, a new start point for Transects T3 and T4 were created in 1993. In 1998, T3 was not surveyed, in 1999 T3 and T4 were not surveyed, and in 2002 T1 and T4 were surveyed. In 2004, T1 and T2 were discontinued due to logging and Transect T5 was created. In 2007, T3 and T4 were replaced with T6 and T7 due to logging. Surveys conducted since 2007 included Transects T5, T6, and T7.

Pellet-group densities are typically in the low to moderate range in this watershed (Fig. 40). Deer concentrating on winter range during the deeper snow winter of 2011–2012 (Fig. 4) likely contributed to the slightly higher density MPGP (1.87) in 2012. The winters prior to the 2015 (1.39 MPGP), 2018 (1.72 MPGP), and 2019 (1.61 MPGP) counts were milder, but densities remained high. During the 2017–2021 period, pellet-group densities were stable at the upper end of their historic range.

**Figure 39. A bear den high in a tree, Snakey Lakes area, Prince of Wales Island, Alaska. Photo of Karin McCoy, ADF&G. ©2019 ADF&G**

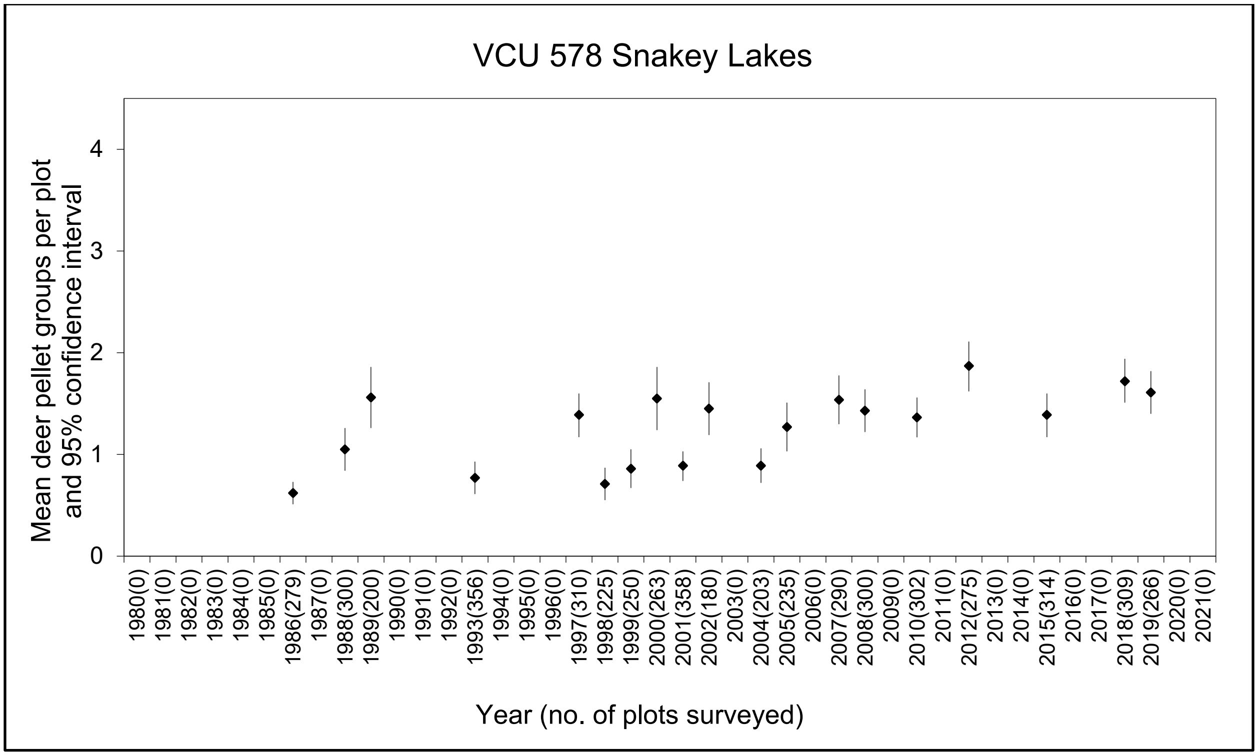



**Figure 40. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 578, Snakey Lakes area, Prince of Wales Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

Twelvemile Arm (VCU 621)

PELLET-GROUP SURVEY RESULTS

This VCU is located near Kasaan Bay on the east-central portion of Prince of Wales. From 1985 to 2018 pellet-group densities have ranged from very low to high in this VCU (Fig. 41). Mean deer-pellet groups per plot have increased substantially since 2002, with population densities at moderate-to-high levels since 2007. Deer were in the high-density category (2.27 MPGP) in 2012 (Fig. 41). This VCU was surveyed once during 2017–2021. The 2018 count (1.57 MPGP) was moderate density.

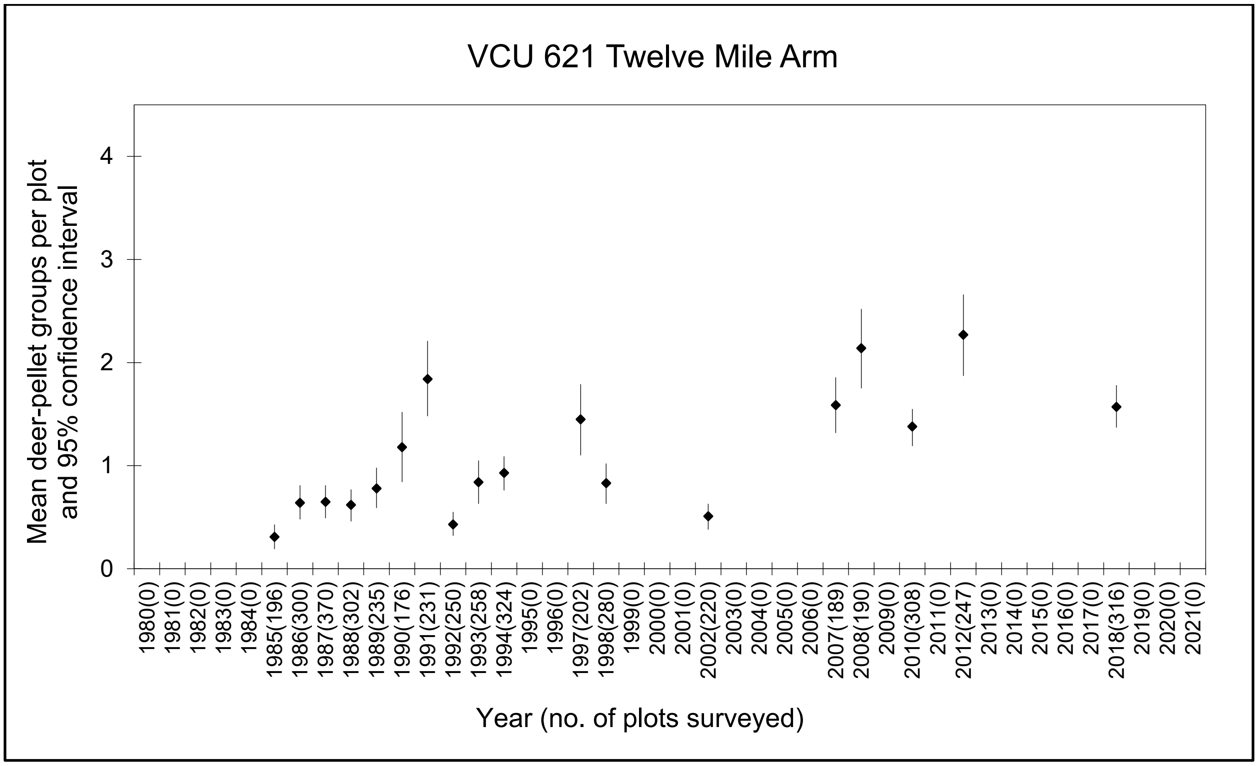



**Figure 41. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 621, Twelvemile Arm area, Kasaan Bay, Prince of Wales Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

## UNIT 3 OVERVIEW

### Summary

In Unit 3, 4 VCUs were surveyed during the 2017–2021 period. VCU 435 (Castle River) and was surveyed once, VCU 442 (Portage Bay) twice, and VCUs 448 (Mitkof) and VCU 437 (East Duncan) were surveyed 3 times. Historically, pellet-group densities in VCUs 435 and 442 have been stable at relatively low levels compared to other areas in the region.

Pellet-group density trends indicate that deer populations in the Castle River watershed (VCU 435) are increasing or stable at the upper end of the low-density category during 2017–2021. Pellet-group densities in the Portage Bay watershed (VCU 442) were also the highest ever recorded for this watershed during 2017–2021, increasing from a historically low-to-moderate pellet-group density category in 2019, for the first time recorded (Table 1). Densities in the East Duncan watershed (VCU 437) and Mitkof Island (VCU 448) experienced a marked decline from the moderate pellet-group density category in 2007, to the low category in 2009, and remained stable at low densities through 2016. Densities increased during this 2017–2021 period to the moderate-density category. Pellet-group surveys were cancelled in 2020 and 2021 in all Unit 3 VCUs.

### Castle River (VCU 435)

#### PELLET-GROUP SURVEY RESULTS

Castle River is located on Kupreanof Island in western Duncan Canal and has been surveyed 8 times between 1984 and 2018. Transect T2 is located on Big Castle Island and Transects T1 and T3 are on Kupreanof Island. All 3 transects were surveyed, and timber harvest has not occurred directly on any transect. The topography traversed is mostly flat and habitat is characterized primarily by muskeg and noncommercial forest. Stands of larger trees are primarily located along beaches and stream courses. Since surveys began in 1984, pellet-group densities (Fig. 42) ranged from very low to low and are relatively lower than other areas of Region I.

The 2018 survey (0.52 MPGP) was the only survey conducted during the 2017–2021 period. While the MPGP is within the low pellet-group density category, it was the on the upper end of all recorded MPGPs for this VCU, and 3 times higher than the previous count in 2013 (0.15 MPGP).

#### CASTLE RIVER AREA LOCAL SNOW TRENDS

Temporary snow measurement stations were placed at low and mid elevations near the beginning and endpoint of Transect T3 on the west side of Duncan Canal in VCU 435 (Fig. 43). Snow was slightly deeper at this location than what was observed on the opposite side of Duncan Canal (VCU 437, East Duncan). Between 1 February and 17 April 2021 (69 days), snow depths were between 11 and 21 inches in the VCU 435 mid-elevation site (564 feet), while there were just 9 days of snow depths between 11 and 13 inches at the low-elevation site (49 feet) during the winter of 2020–2021 (Fig. 43).

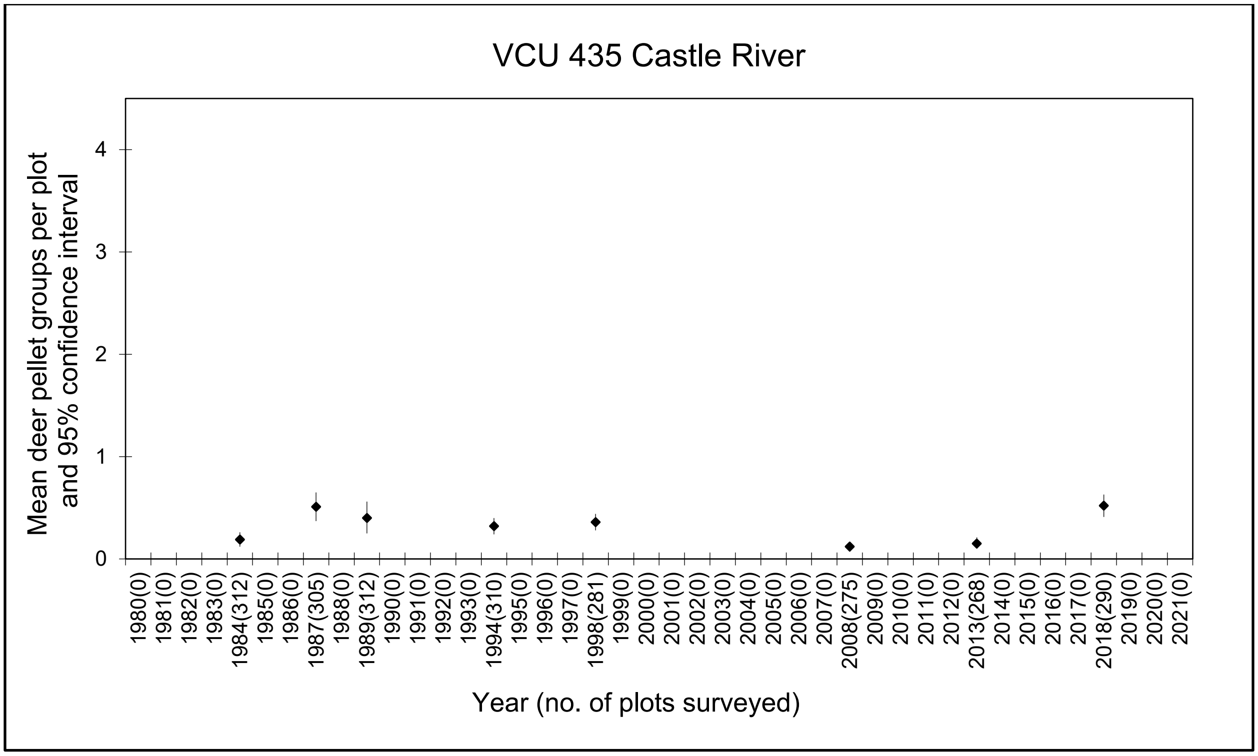



**Figure 42. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 435, Castle River area, Kupreanof Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

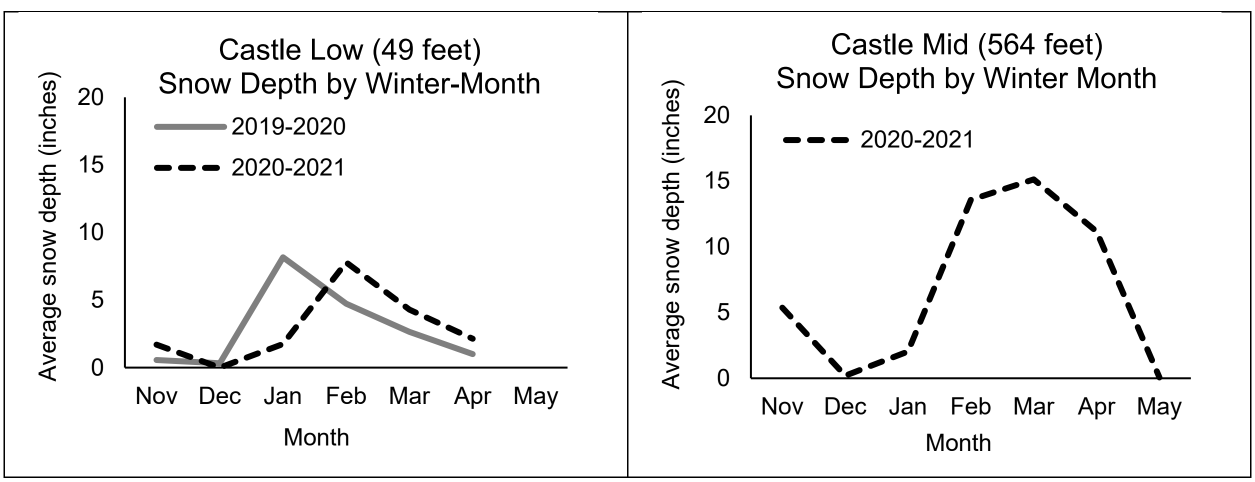



**Figure 43. Snow depth at value comparison unit (VCU) 435, Castle River area, Kupreanof Island. Snow stations are located near the start and end of Transect T3.**

## East Duncan (VCU 437)

### PELLET-GROUP SURVEY RESULTS

Three transects were established on the Lindenberg Peninsula in 1990 along the eastern shore of Duncan Canal. The habitat and topography in this watershed are favored by deer as winter range compared with VCUs 435 or 442, so greater deer abundance would be expected. Transect T1 is mostly low-volume forest at predominantly low elevations, rising from sea level to a 500-foot knob near the Castle Islands. A portion of Transect T1 was clearcut in 1992. T2 starts near the head of the bay and traverses medium-volume hemlock forest, brush, and windthrown trees, then skirts a young clearcut. Transect T3 climbs gradually from sea level up a southwest-facing slope to 1,500 feet while passing through medium-volume, old-growth forest. All 3 transects were included in each survey, except in 1998, when high winds prevented access to Transect T1. An additional transect was surveyed in 2014.

Historically, pellet-group densities were moderate in this area, but decreased in 2008, where they remained at low densities during 2011–2016 (Fig. 44). Pellet-group densities increased in 2017 (1.01 MPGP), 2018 (1.25 MPGP), and 2019 (1.17 MPGP).

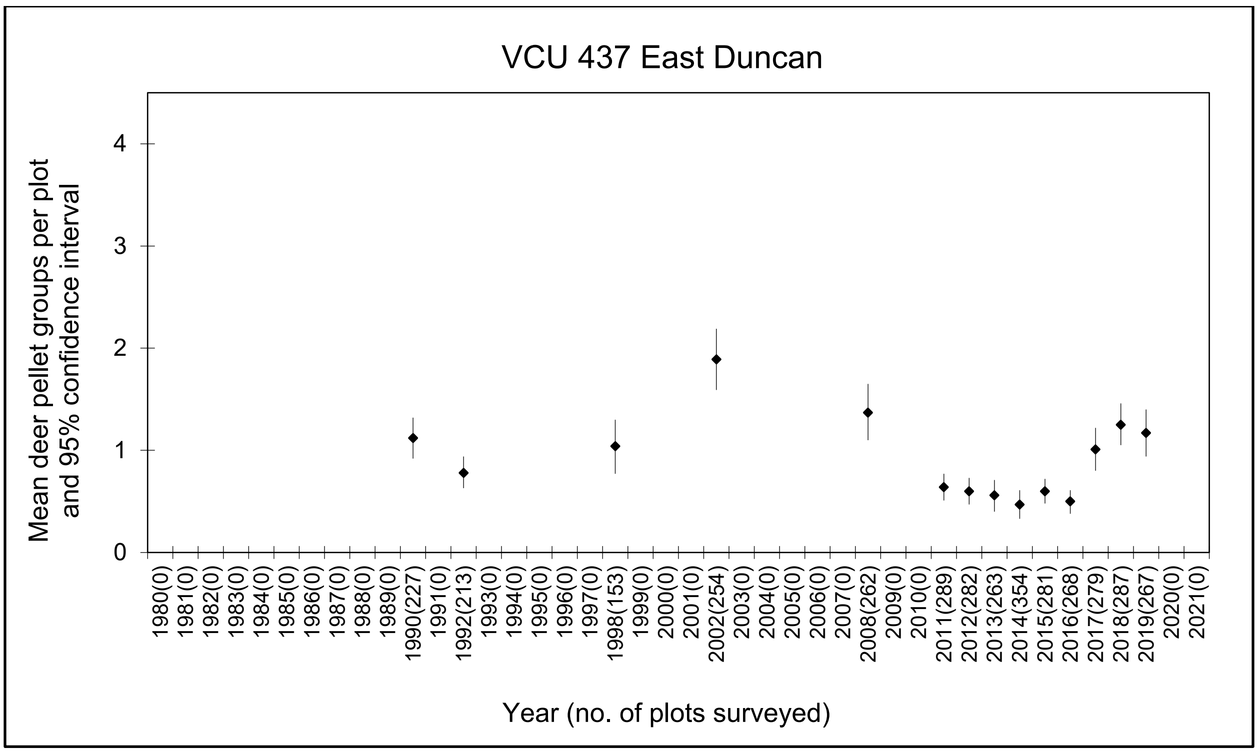



**Figure 44. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 437, East Duncan Canal area, Kupreanof Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

## East Duncan canal Area Local Snow Trends

Within VCU 437, temporary snow-measurement stations were placed within muskegs at low, medium, and high elevations on the east side of Duncan Canal near survey locations. While winters in the Kupreanof area were relatively mild for most of the 2017–2021 period (Fig. 5, NOAA 2022; Fig. 45), there were some periods of deep snow. Snow depths at low and mid elevations in the East Duncan Canal area exceeded 11 inches for over 41 days from late January through mid-March 2018. Snow depth and persistence was also notably higher at the mid-elevation station (467–567 feet, Fig. 45). The rest of that winter, however, was exceptionally mild with little to no snow on the ground at low elevations.

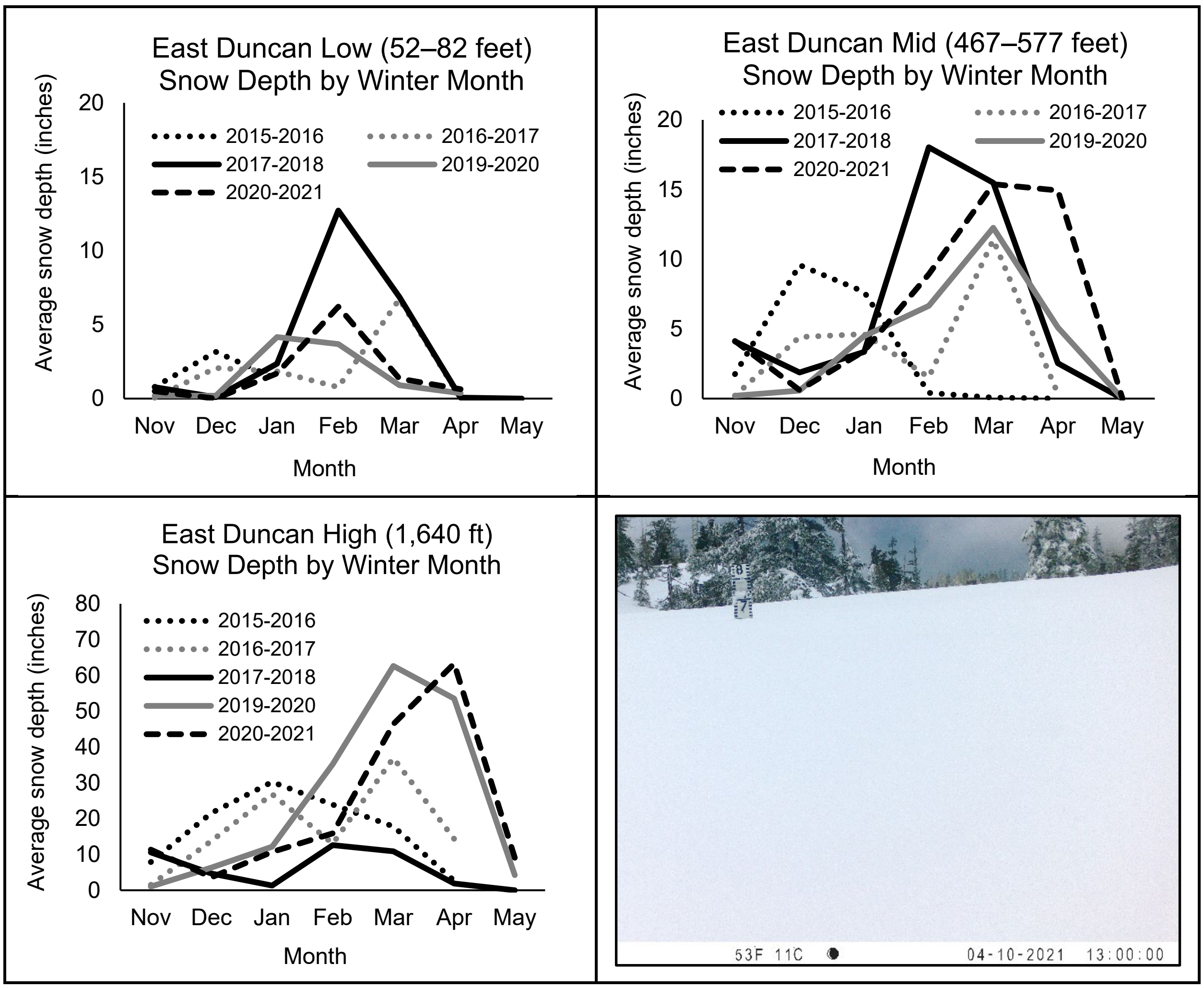



**Figure 45. Average snow depth at value comparison unit (VCU) 437, East Duncan Canal area, Kupreanof Island. Photo indicates almost 7 feet of snow on 10 April 2021 at 1,325-feet elevation at the Kupreanof high-elevation snow station. ©2021 ADF&G.**

## Portage Bay (VCU 442)

### PELLET-GROUP SURVEY RESULTS

Three transects were established at Portage Bay on the north shore of Kupreanof Island in 1993. Transect T1 starts on the west side of the bay near Stop Island and traverses low-volume, mixed forest to 640 feet elevation. Transect T2 starts at the head of the bay and traverses medium-volume hemlock as it skirts a young clearcut; a bearing change is made at plot 49 from 45 degrees to 25 degrees. Transect T2 was discontinued after 1998 because the shallow tide flat at the head of the bay made access difficult. T3 starts on the east side of the bay (near the entrance to the bay) and traverses low- to medium-volume hemlock forest extending up a steep slope to 1,500 feet. Dense brush and windthrown trees make this transect very strenuous and time-consuming to complete. In 2012, Transect T4 was created to replace for T2. This transect rises steeply from sea level to 1,500 feet in 52 plots, traversing mostly medium-volume, old-growth forest.

There are few areas of critical deer winter habitat (higher-volume, old-growth stands on southerly aspects) in this watershed. From 1993 (first survey) through 2017, pellet-group densities have remained at low levels (Fig. 46). This VCU was surveyed twice during the 2017–2021 period, with densities that doubled from 2017 (0.4 MPGP) to 2019 (1.1 MPGP), rising to the moderate density category for the first time (Table 1).

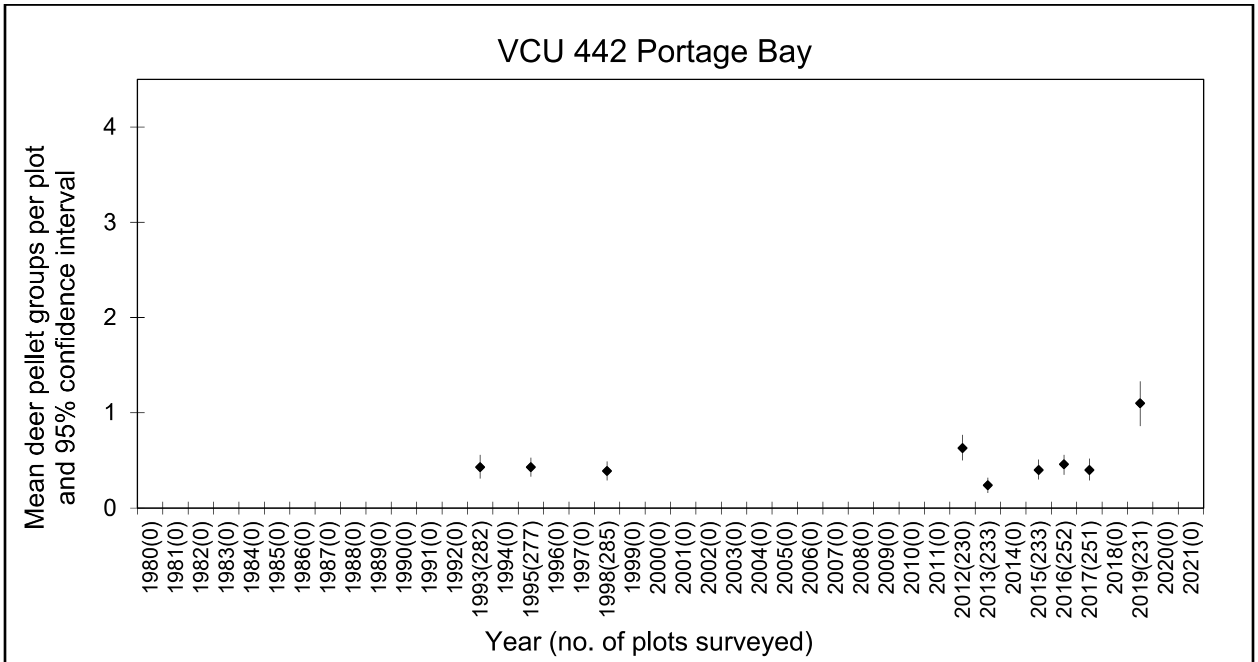



**Figure 46. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 442, Portage Bay area, Kupreanof Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

## Mitkof (VCU 448)

### PELLET-GROUP SURVEY RESULTS

Three transects were established in 1984 on southwestern Mitkof Island across from Woewodski Island. These steep and west-facing slopes are easily accessible by skiff from Petersburg and climb to 1,500 feet elevation through moderate-volume forest. The habitat and topography in this watershed are more favorable deer winter range than habitat in VCUs 435 or 442, so greater deer abundance would be expected. This is reflected by historically moderate pellet-group densities (Fig. 47).

Spring 2007 MPGP were larger, but still in the moderate category. Following 2007, pellet-group densities decreased and then stabilized at a low densities through 2016. During 2017–2021, pellet-group densities were at moderate levels again in 2017 (1.02 MPGP), 2018 (1.77 MPGP) and 2019 (1.21 MPGP).

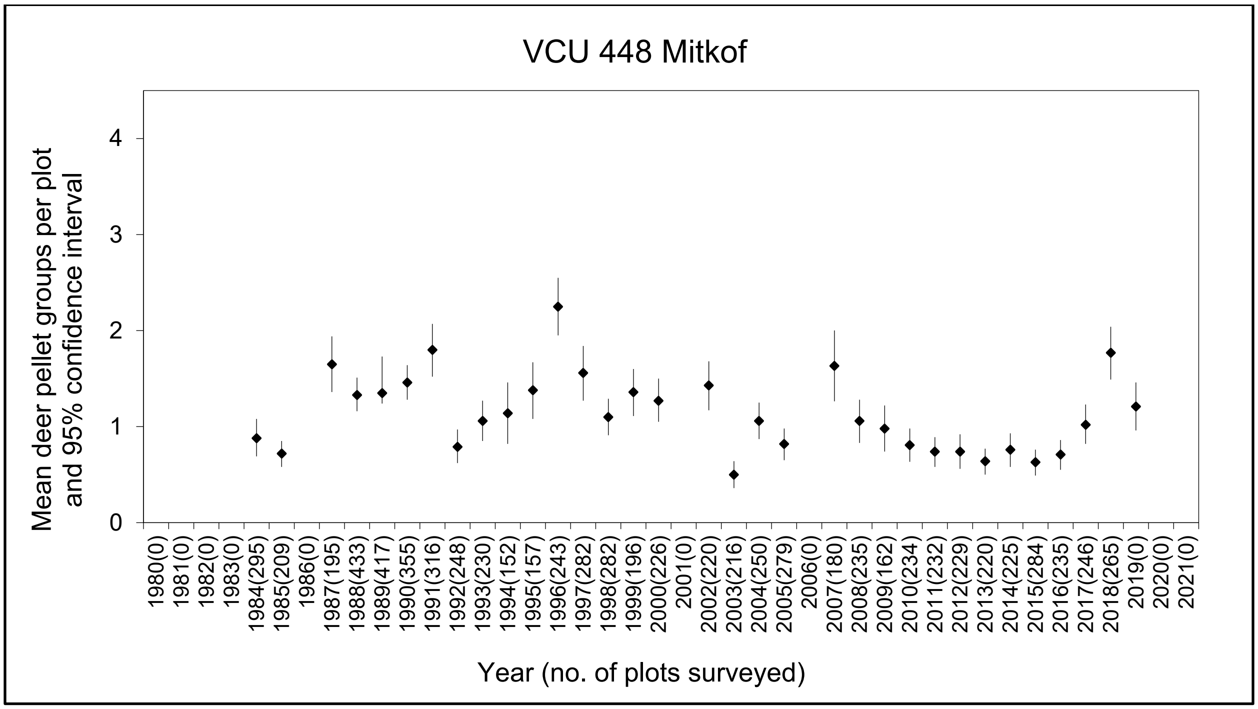



**Figure 47. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 448, east side of Wrangell narrows between Battery Islets and Point Alexander, Mitkof Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

### Mitkof Local Snow Trends

Snow measurement stations were placed in muskegs at low, mid, and high elevations on the southwest side of Mitkof Island, across from Woewodski Island. Snow persistence was long during the 2020–2021 winter with 63 consecutive days of snow depths between 21 and 48 inches at the mid-elevation station on Mitkof Island (Fig. 48). There was less snow at the low-elevation station; snow depths of 11 inches or more were recorded for 8 days in February, with a few inches of snow on the ground through the first week of April.

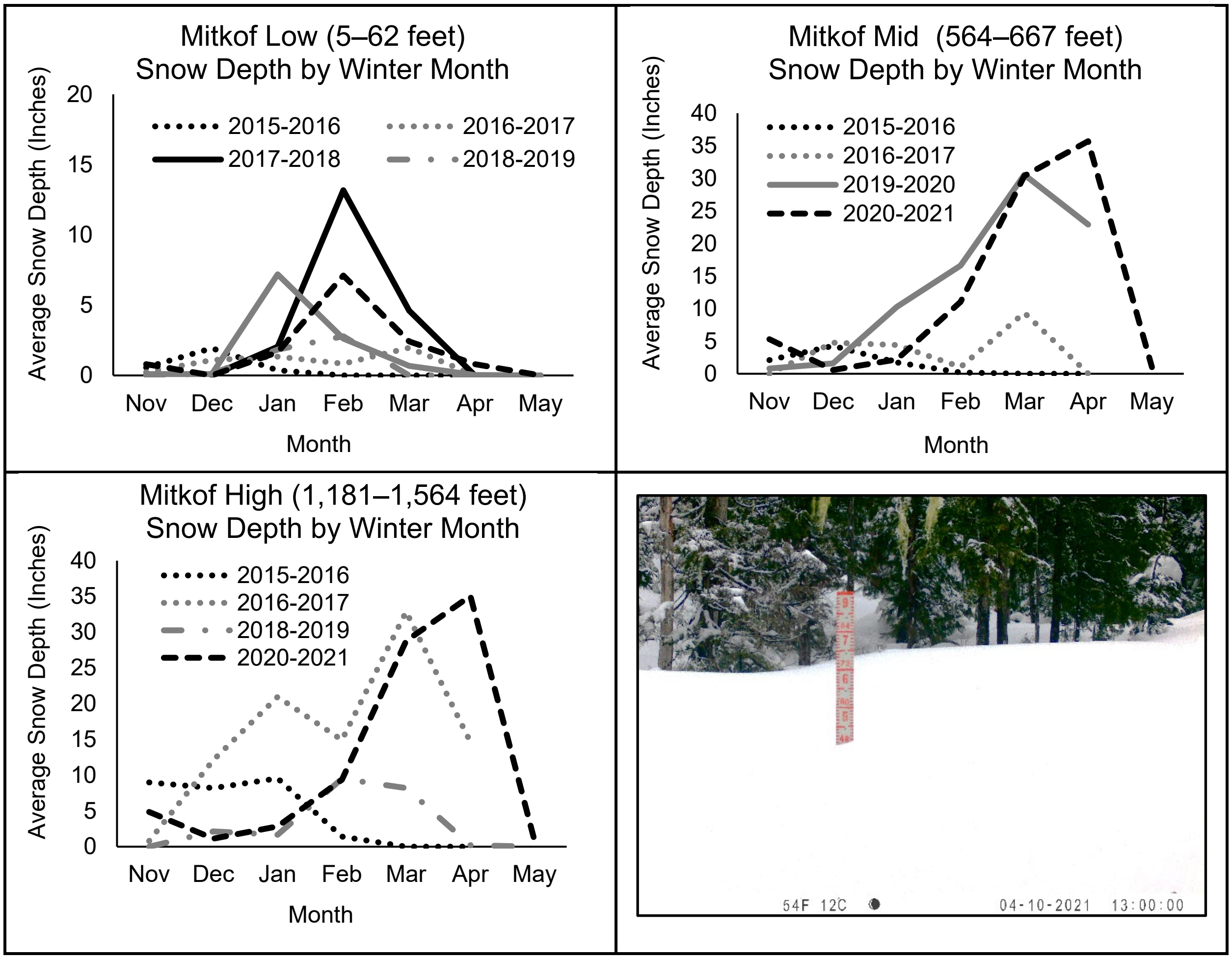



**Figure 48. Average snow depth at value comparison unit (VCU) 448, Mitkof Island. Photo indicates approximately 4 feet of snow on 10 April 2021 at 1,200 feet of elevation at the Mitkof Island high-elevation snow station. ©2021 ADF&G.**

## UNIT 4 OVERVIEW

### Summary

Pellet-counts in Unit 4 were historically conducted off the Liveaboard USFS Sitka Ranger boat. With that boat having been decommissioned in the late 2000s, transport to more remote survey areas in Unit 4 has become more time consuming and expensive. Most Unit 4 survey watersheds are not close enough to Sitka or Juneau to reach by boat, conduct the survey, and return in the course of a day. Survey areas may be reached by renting a private Liveaboard boat or aircraft but are costly and introduce additional logistical challenges. In times of more limited fiscal resources, surveys in Unit 4 are selected, in part, by access.

During 2017–2021, pellet-group surveys in Unit 4 were expanded to include a larger geographic area, such that more VCUs were monitored less frequently. Pellet-group surveys prior to 2017 focused on frequent surveys of just 4 VCUs. Areas with more hunting pressure were higher priorities. 2017–2021 surveys covered 10 VCUs on 5 islands: Admiralty (Barlow Cove, Hawk Inlet, Pybus Bay), Chichagof (Pavlof, Finger Mountain), Baranof (Range Creek and Kelp Bay), Kruzof (Kalinin Bay), and Pleasant Island. MPGP counts were on the upper end of the historic range for most VCUs surveyed. Some areas had the highest pellet-group densities ever recorded.

Pleasant Island is the exception to this general trend in Unit 4. Deer appeared to be robust at moderate densities on Pleasant Island through 2015. MPGP during 2017–2021 was 0.00. Pleasant Island is the only place in Unit 4 inhabited by wolves.

## Barlow Cove (VCU 125)

### PELLET-GROUP SURVEY RESULTS

Located on the northern tip of Admiralty Island, Barlow Cove is a popular destination for Juneau hunters. Virtually the entire VCU is below 500 feet elevation and within 1.5 miles of a beach. The area is dominated by low-volume and noncommercial forest with extensive muskegs, lakes, and ponds (Fig. 49). This VCU was surveyed extensively in 1982 with 30 transects (2,567 plots) that extended across the peninsula between Barlow Cove and Lynn Canal. Surveying was subsequently limited to 3 transects and pellet-group densities remained similar.

**Figure 49. Barlow Cove area, Admiralty Island. Photo of Abby McAllister. ©2018 ADF&G.**

Deer pellet-group densities have historically been in the moderate range and fairly stable (Fig. 50). The 2018 MPGP (2.38) was in the high deer-density category for the first time since pellet-groups surveys began.

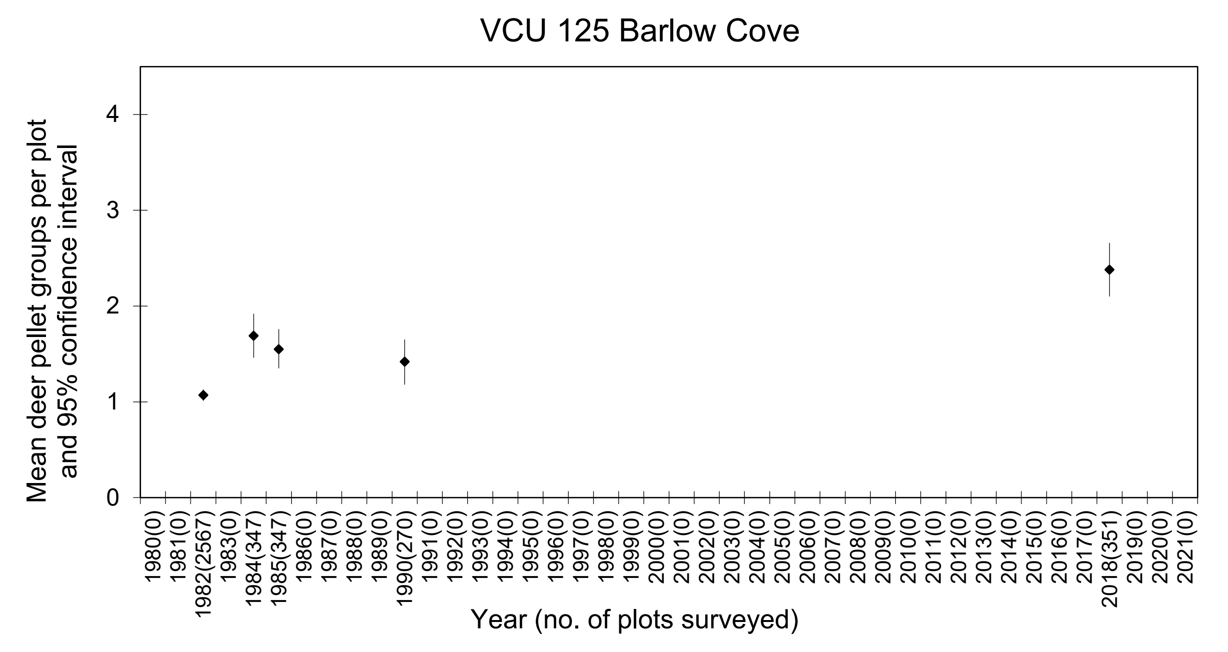



**Figure 50. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 125, west side of Barlow Cove, Admiralty Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

## Hawk Inlet (VCU 128)

### Pellet-Group Survey Results

Located on northwestern Admiralty island, Hawk Inlet was intensively sampled in 1982 on both sides of the inlet, with transects extending to 1,000 feet. In 1984, 3 transects on the northwest side of the inlet were selected for continued surveying. Pellet-group density trends (Fig. 51) reflect the results of the extensive sampling in 1982 (1,605 plots) as well the subsequent years with 3 transects only. Note that the number of plots sampled per year has varied from 176 (1999) to 1,605 (1982). Only 2 of 3 transects (T2 and T3) were sampled in 2009 due to lack of surveyors (Fig. 52).

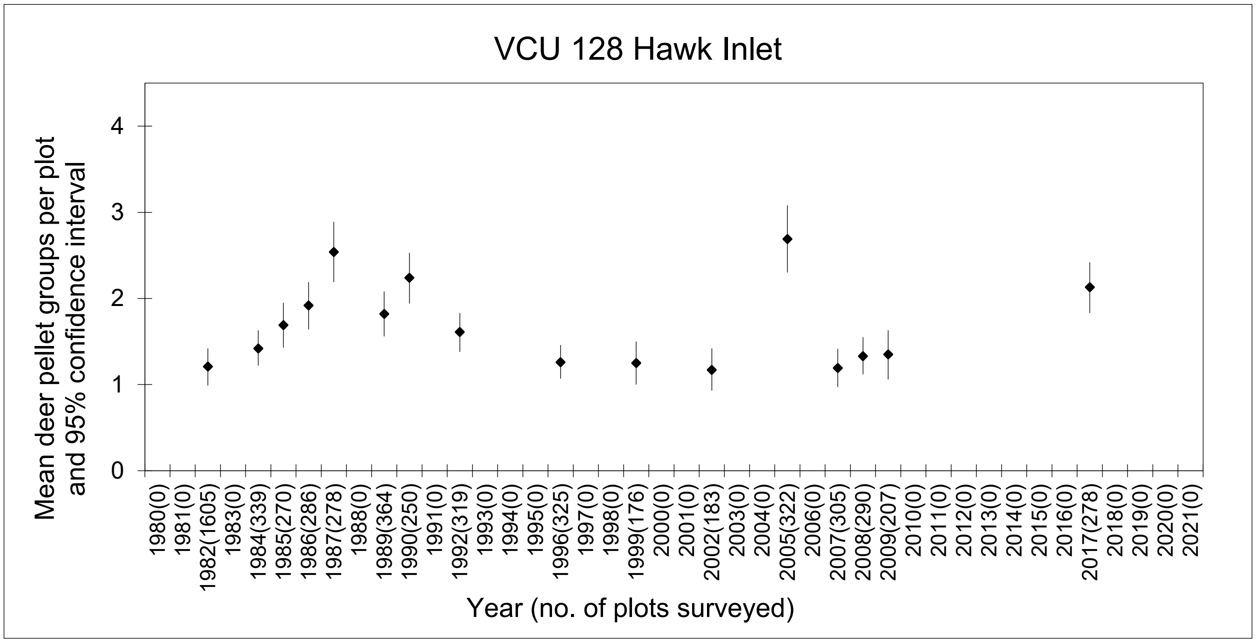



**Figure 51. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 128, north side of Hawk Inlet, Admiralty Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

Pellet-group densities have historically been in the moderate range, with only 4 counts recorded in the high category range (Fig. 51). During 2017–2021, the only survey conducted occurred was in 2017 with a density of 2.13 MPGP which was the fourth highest recorded for VCU 128 since the survey began in 1982. This represented a 58% increase from 2009 (1.35 MPGP).

**Figure 52. Transect T3, Hawk Inlet, Admiralty Island. Photo of Stephanie Sell. ©2017 ADF&G.**

Pybus Bay (VCU 182)

PELLET-GROUP SURVEY RESULTS

Pybus Bay is located on the southeast coast of Admiralty Island (Fig. 53). It is an important hunting area for Juneau, Petersburg, and Kake hunters. Although first surveyed in 1981, the 2019 survey was the first conducted in 20 years. Pellet-group densities were historically moderate to high in this VCU (Fig. 54), but the 2019 count (2.82 MPGP, Table 1) was in the very-high density category, the highest ever recorded for this watershed (Fig. 54). This MPGP is more than double that of the last MPGP in 1998 (1.37).

**Figure 53. Transect T3 start tree, Pybus Bay, Admiralty Island, Alaska. Photo of Paul Converse, ADF&G. ©2019 ADF&G.**

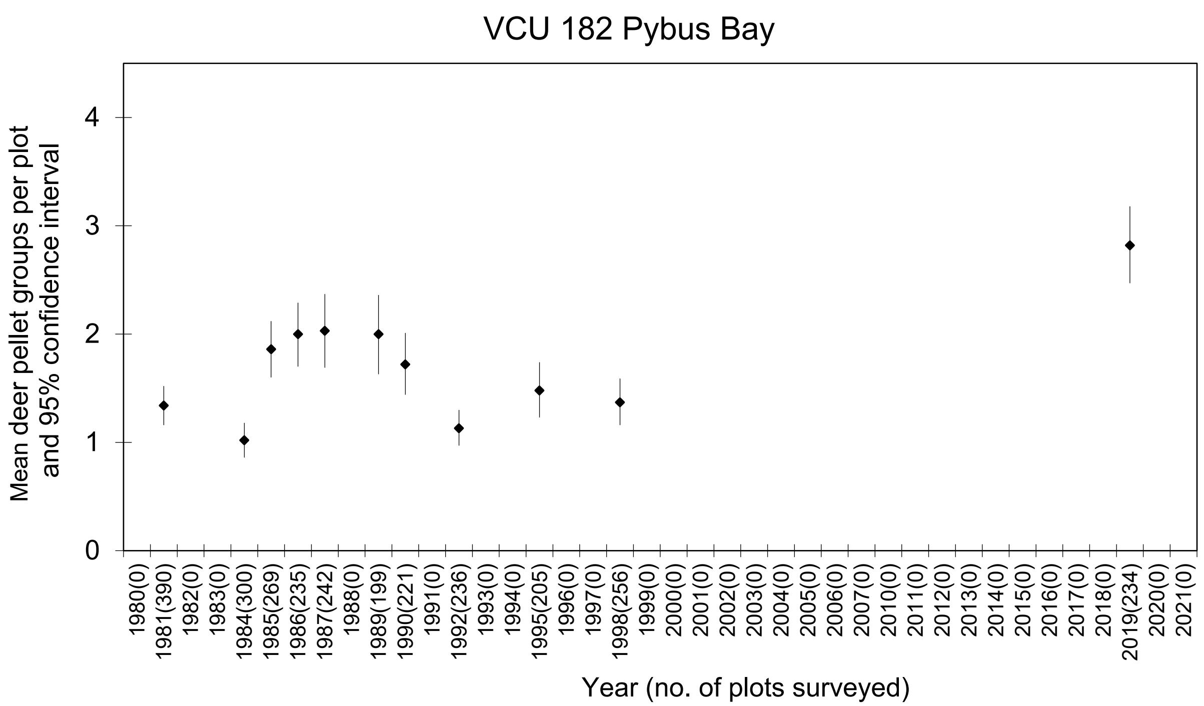



**Figure 54. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 182, Pybus Bay, southeastern Admiralty Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

Pleasant Island (VCU 185)

### Pellet-Group Survey Results

Pleasant Island is located in Icy Strait close to the community of Gustavus and has been a primary deer hunting area for local residents. Predators on Pleasant Island consist of a small pack of wolves that are being monitored by ADF&G researchers (Fig. 55). Three transects were established here in 1991 in response to local concerns with winterkill in 1990.

**Figure 55. Wolf scat collection on Pleasant Island. Photo of ADF&G Biologist Stephanie Sell. ©2018 ADF&G.**

Transect locations were selected because most locals hunt the western half of the island. Pleasant Island is fairly flat (elevations below 600 feet) with extensive muskeg. Quality winter range is found along beaches and creeks. In 2015, only 2 of 3 transects were sampled due to lack of surveyors.

During 2017–2021, VCU 185 was surveyed 3 times (Fig. 56, Table 1). Populations decreased from moderate in 2015 to very low in 2016, with no pellet-groups detected in the 2018 survey. Deer trails were overgrown, and no tracks or other sign were detected. The deer population was likely extirpated from the survey area, although a few deer at very low densities would be difficult to detect. The wolf colonization coincides with the depletion of deer on the island, and diet analyses indicate that wolves have switched to marine resources (Roffler et al. 2021).

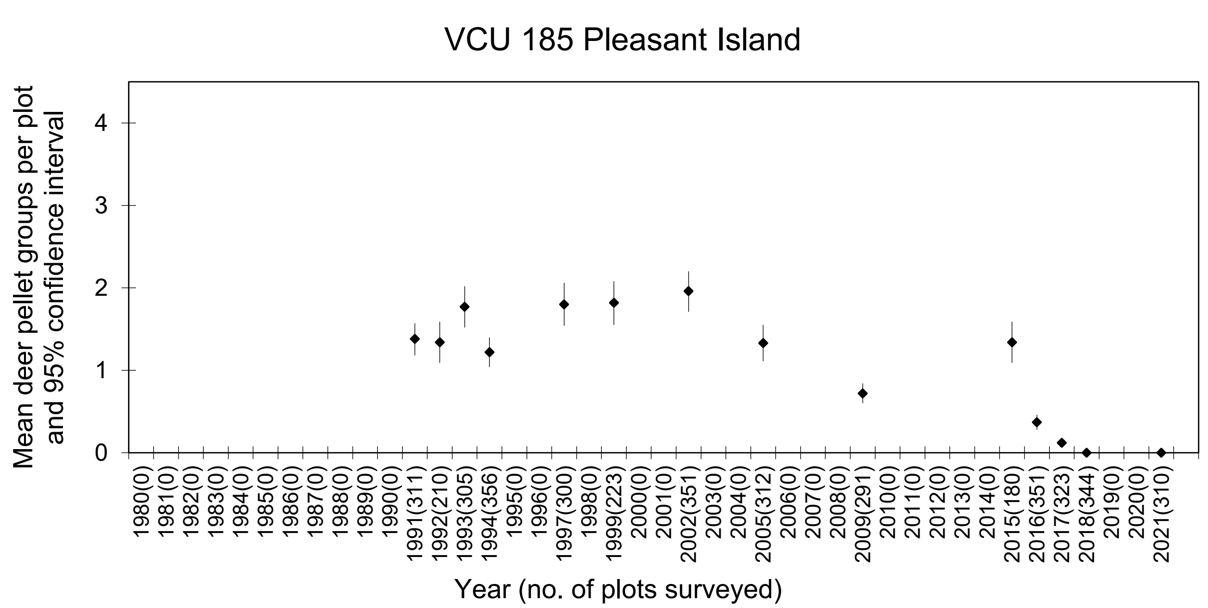



**Figure 56. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 185, Pleasant Island, Alaska, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

Pavlof River (VCU 218)

PELLET-GROUP SURVEY RESULTS

Three transects were established in 1988 in VCU 218 on northeast Chichagof Island, which is accessible via logging roads and boat from the community of Hoonah, and via boat from Tenakee Springs and Juneau. Two transects start near the falls at Pavlof Harbor and a third starts from Wachusett Cove. A variety of habitat types are encountered in the area (Fig. 57, Fig. 58), each with abundant deer forage. Two transects traverse low-elevation winter range below 500 feet elevation, while the third rises to approximately 1,500 feet in elevation.

**Figure 57. Pavlof Lake, value comparison unit (VCU) 218, northeast Chichagof Island. ©2019 ADF&G.**

**Figure 58. Chichagof Island, Alaska. Photo of Jason Waite. ©2019 ADF&G.**

During 1999–2005, pellet-group densities were in the high category (Fig 59). Pellet-group densities dropped substantially in 2009 to the low pellet-group density category. However, only two transects (T1 and T2) were sampled in 2009 which may have biased results. Because of concerns for deer in this area, emergency-order doe closures were implemented for several years. There was also a study of deer population density (McCoy et al. 2014) and habitat use (McCoy and Gregovich 2021).

Deer pellet-group density increased from low to moderate levels after the mild winter of 2010. This is supported by other research in this area using fecal DNA and spatial mark–recapture techniques (McCoy et al. 2014), which indicated that densities increased from 2010 to 2011. The pellet-group density observed in 2019 was on par with those in 2002 and 2005. Population densities in this area have returned to the high category that was observed in the past.

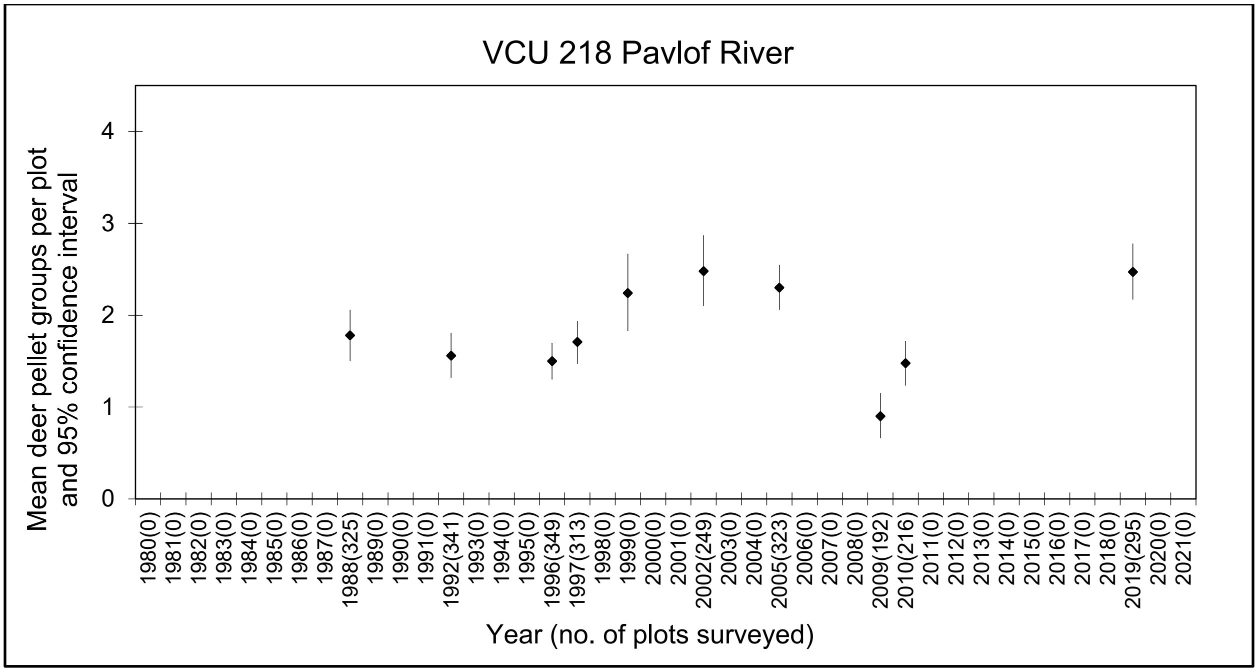



**Figure 59. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 218, Pavlof River area, Chichagof Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

## Finger Mountain (VCU 247)

### Pellet-Group Survey Results

Located in Hoonah Sound on the shores of Chichagof Island, VCU 247 can be easily reached by boat from Sitka and was surveyed regularly due to easy access and popularity for hunting.

**Figure 60. View from subalpine habitat, Transect T1, Finger Mountain. ©2017 ADF&G.**

All transects have southwest-facing aspects and extend to high-elevation habitat (Fig. 60); however, snow can sometimes prohibit reaching 1,500 feet during surveys that follow severe winters. This VCU has complex topographical and vegetative variability. Transect locations are characterized by some of the highest quality deer habitat within the watershed. Particularly good winter range is found in the Finger River valley where Transect T2 is located.

Deer pellet-group densities in this watershed (Fig. 61) were consistently high to very high which is exceptional compared to the rest of the region. Although counts are highly variable, even the lowest densities recorded fall within the upper end of the moderate category. The pellet-group densities documented during 2017–2021 were the highest (4.28 MPGP) and fourth highest (3.61 MPGP) for this watershed. Note that in 1983, a much greater proportion of the watershed was surveyed (2,145 plots).

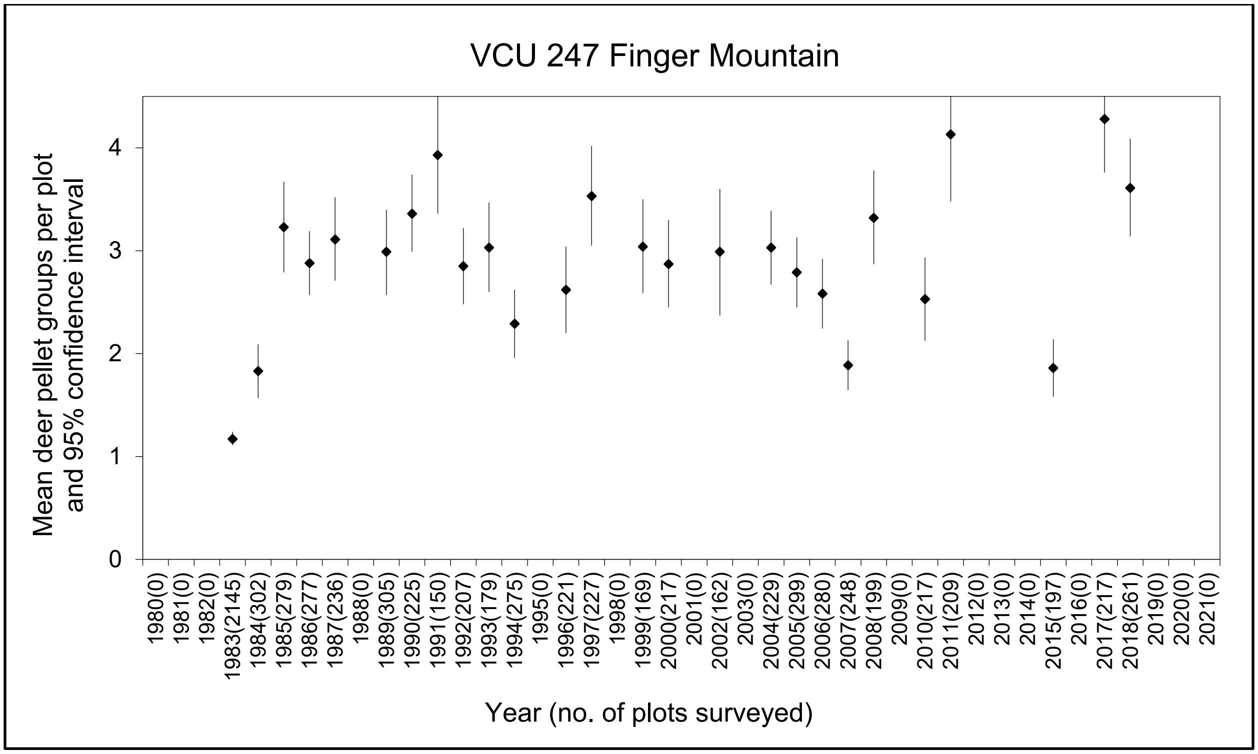



**Figure 61. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 247, Finger Mountain area, north Hoonah Sound, Chichagof Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

## Range Creek (VCU 288)

### PELLET-GROUP SURVEY RESULTS

VCU 288 is located on the northwest facing slopes of Baranof Island, along southeastern Peril Strait, and adjacent to Baby Bear State Marine Park. Much of the watershed is unforested; and therefore, includes very little high-quality deer winter range (Fig. 62). However, it is a popular hunting area and is easily accessible from Sitka.

**Figure 62. Muskeg and scrub forest are characteristic of habitat within value comparison unit (VCU) 288. ©2017 ADF&G.**

Survey results in 1983 and 1984 were in the low-density category. There was a notable difference in the number of plots surveyed in 1983 versus 1984, with 1,788 and 303 plots surveyed, respectively (Fig. 63). While initial surveys yielded low pellet-group densities, MPGP in this watershed have been stable in the mid to upper end of the moderate pellet-group density category. This VCU was surveyed once during 2017–2021, in 2017. The 2017 survey was the highest on record for this watershed (2.01 MPGP), reaching the high pellet-group density category for the first time since this survey began in 1983.

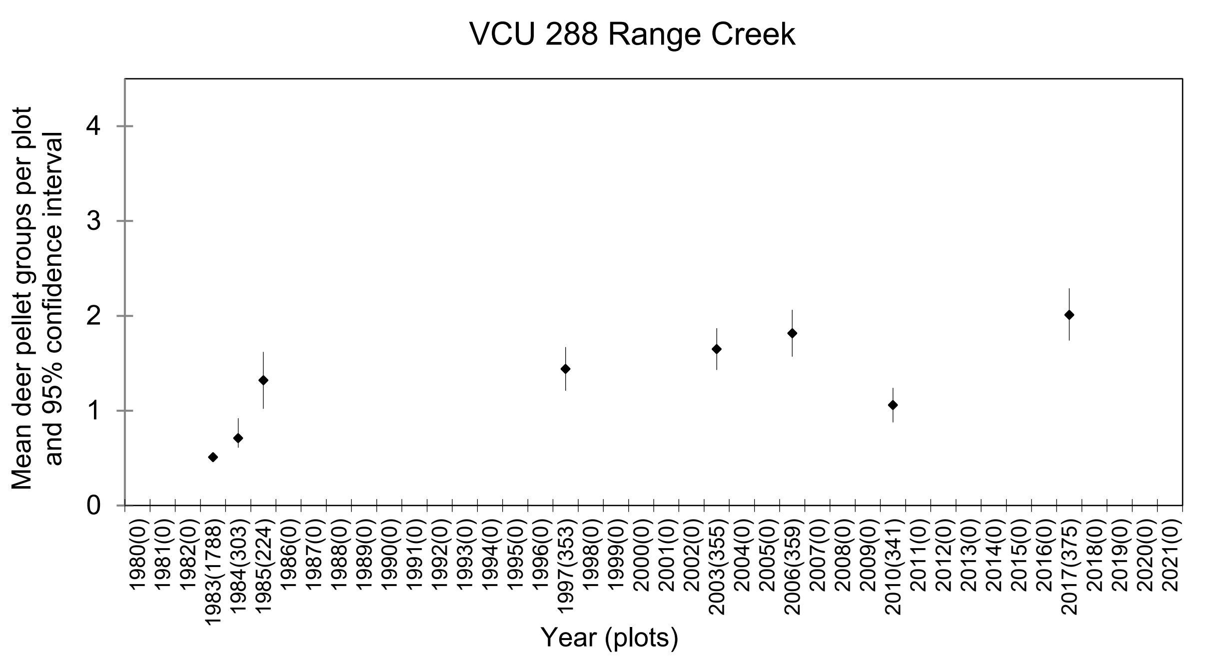



**Figure 63. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 288, Range Creek area, northwest Baranof Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

## Middle Arm Kelp Bay (VCU 298)

### PELLET-GROUP SURVEY RESULTS

In 1990, 4 transects were established near the middle arm of Kelp Bay on Baranof Island, which is fairly remote, about 20 air miles southwest of Angoon, across Chatham Straight. All transects have substantial undergrowth, windthrown trees, cliffs, and traverse patches of high- and low-volume forest. Transect T2 skirts a substantial freshwater pond (Fig. 64). Transect T1 is mostly within low-elevation areas, Transects T2 and T3 rise to 1,500 feet, and T4 reaches moderate elevations of approximately 800 feet.

**Figure 64. Large pond at Transect T2, Middle Arm Kelp Bay, Alaska. ©2019 ADF&G.**

1990 was the only year that all 4 transects were surveyed. After 1990, the variation in the number of transects and which transects were surveyed may have influenced results. Only Transects T3 and T4 were surveyed in 1997; T1 and T2 in 2003; T1, T3, and T4 in 2006; and T2, T3, and T4 in both 2008 and 2019.

Similar to trends other areas in Unit 4, MPGP have typically been in the moderate- to high-density range (Fig. 65). VCU 298 was surveyed only once during 2017–2021, in 2019, with an MPGP of 2.44 MPGP (high density). Note the 2019 MPGP is 28% more than the last MPGP recorded in 2008 (1.91 MPGP).

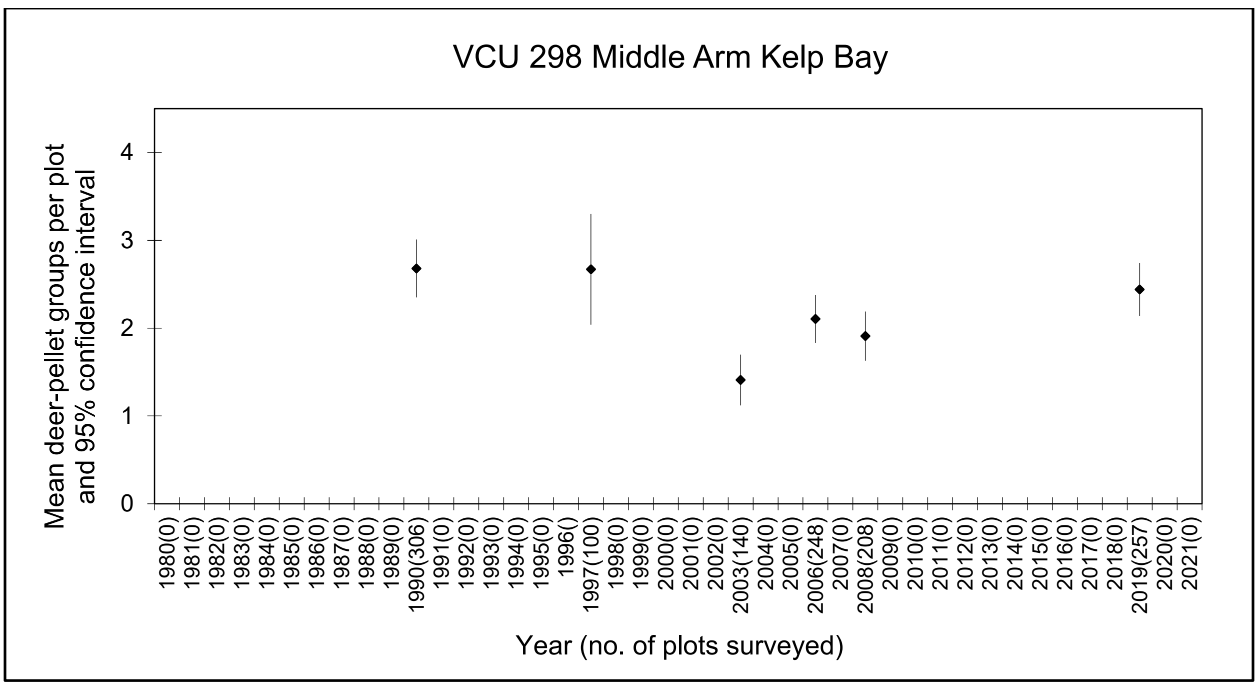



**Figure 65. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 298, Kelp Bay area, northeast Baranof Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

## Nakwasina (VCU 300)

### PELLET-GROUP SURVEY RESULTS

**Figure 66. Minimal snow persisted at the end of transects in value comparison unit (VCU) 300, Baranof Island, Alaska. ©2018 ADF&G.**

This VCU is located on Baranof Island, a short boat ride from Sitka. This area is very popular with local hunters and has produced some of the highest deer pellet-group densities in Southeast Alaska. VCU 300 is characterized by high-quality deer winter range on south-facing slopes. All 3 transects traverse medium-volume forest to elevations of 1,500 feet. feet (Fig. 66).

While there does appear to be substantial fluctuation in pellet-group densities in this VCU (Fig. 67), even the smallest MPGP (1.46) was still in the moderate pellet-group density range, and nearly half of MPGP values for this VCU were in the very high category.

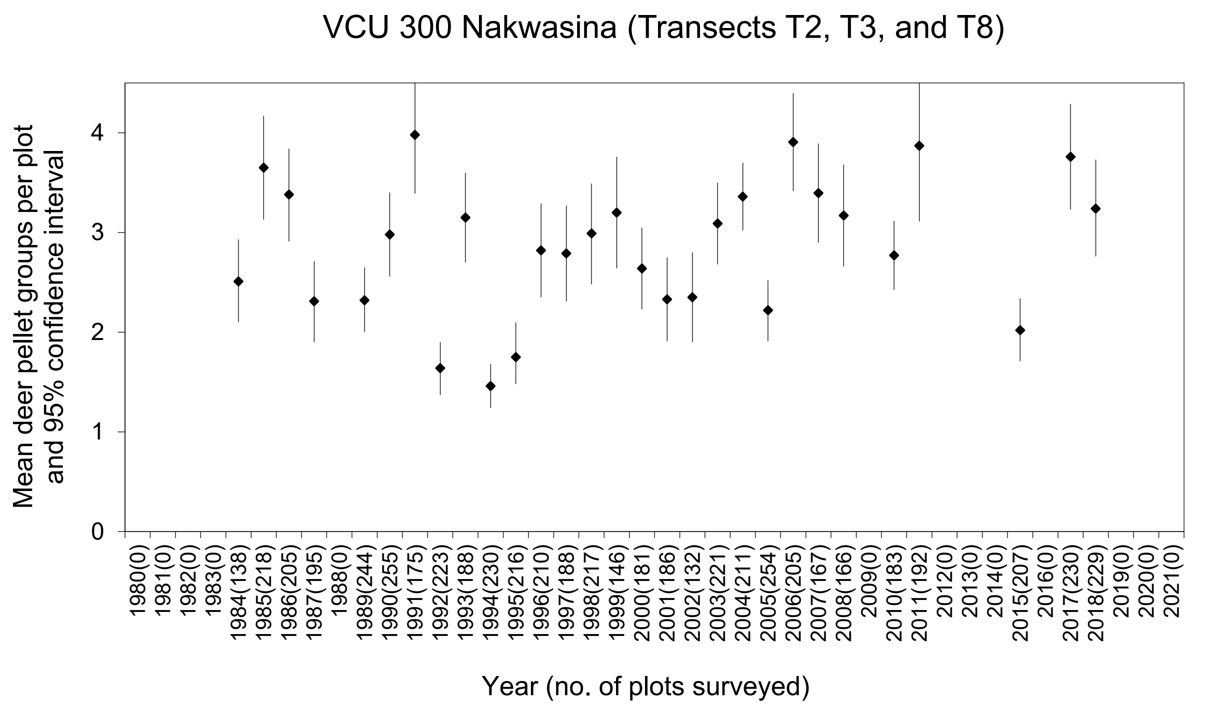



**Figure 67. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 300, Nakwasina Passage area, Baranof Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

## Kalinin Bay (VCU 305)

### PELLET-GROUP SURVEY RESULTS

There are 3 transects (T1, T2, and T3) in VCU 305 which are accessed from Kalinin Bay on Kruzof Island. All are characterized by low- to medium-volume forest. Transects T1 and T3 are steep and reach alpine quickly (Fig. 68). Transect T2 is substantially longer and extends from the head of the bay to a 1,500-foot knob.

**Figure 68. View from the alpine area of Transect T1, value comparison unit (VCU) 305, Kruzof Island. ©2017 ADF&G.**

Very high MPGP recorded during 1985–1987 (Fig. 69) coincided with heavy browsing. In 1989, MPGP (1.75) fell by 47% from the 1988 survey (3.31 MPGP in 1987) to moderate levels. Since then, MPGP counts have generally remained stable in or near the moderate category. While increased winter mortality likely occurred during these deep snow years, there is high-quality winter range and a lack of wolves which likely contribute to deer populations remaining stable. During 2017–2021, this VCU was surveyed twice. Once in 2017 (1.91 MPGP) and again in 2019 (1.46 MPGP), remaining stable at moderate densities.

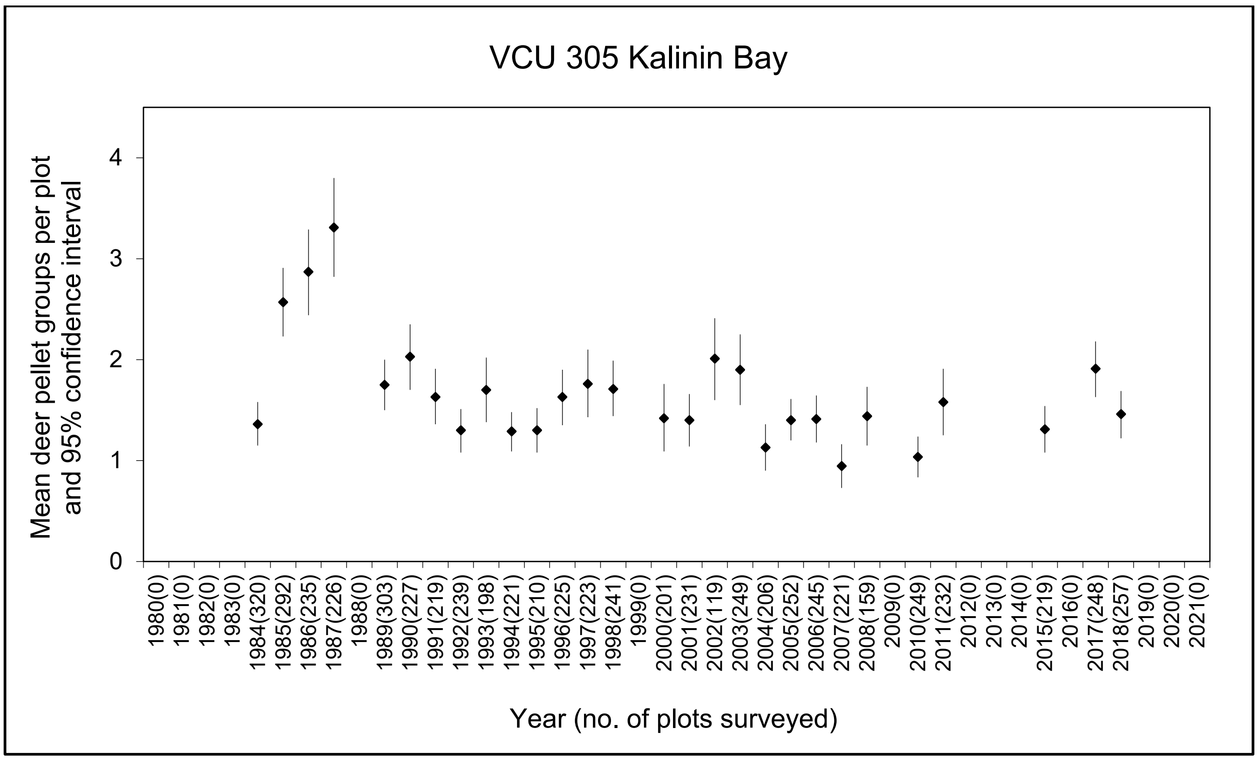



**Figure 69. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 305, Kalinin Bay area, north Kruzof Island, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

## UNIT 5A OVERVIEW

### Summary

In Unit 5A, deer were introduced to the Yakutat and Knight islands in 1934, when 7 does and 5 bucks were translocated from the Rocky Pass area near Petersburg. Four VCUs were surveyed in Unit 5A, but due to staff availability and travel constraints, only 2 VCUs were surveyed repeatedly. VCU 368 (Yakutat Islands) has been surveyed the most frequently and is the only VCU in Unit 5A that has been surveyed since 2011.

VCU 361 (Knight Island) has been surveyed 6 times, primarily in the early 1990s, with relatively low pellet-group densities detected at that time (Appendix). Considered to have some of the best available habitat in the area (Kirchhoff 1991), it would be interesting to resurvey VCU 361 in the future to determine whether pellet-group densities follow a similar trend as VCU 368.

Two areas on the mainland, Ankau (VCU 369) and Humpback Cove (VCU 363), were surveyed in 1991, but have not been resurveyed since. It should be noted that deer populations appear to have expanded their range, with deer now regularly seen on the road system near Yakutat and as far as 50 miles to the east of Yakutat at Dry Bay. Deer densities on the Yakutat forelands are still believed to be much lower than on the islands.

## Yakutat Islands (VCU 368)

### Pellet-Group Survey Results

**Figure 70. Windthrown trees along a survey transect, Yakutat Islands, Alaska. Photo of Surveyor Michelle Duncan. ©2018 ADF&G.**

This VCU incorporates several islands found in Yakutat Bay: Krutoi, Kriwoi, Khantaak, and Dolgoi, but Krutoi was seldom surveyed. Either 1 or 2 transects were established on each island in 1991. The habitat consists primarily of low- to medium-volume hemlock with a blueberry understory, with large areas of windthrown trees (Fig. 70). All transects in VCU 368 are low elevation and not ideal winter range.

During 1991–2004 the MPGP was in the low-density category except in 1993, when the MPGP was 1.07 (moderate-density category); however, only Transect T1 was surveyed. Pellet densities in 2008, 2014, and 2018 were in the moderate-density category and included 5–6 transects and 355–421 plots. MPGP was consistently in the moderate pellet-group density category. In both 2014 and 2018, leaf-out was fairly advanced due to the later timing of the survey in spring. As a result, detectability was reduced, and counts may have been biased low. It is also worth noting that moose pellets were documented on the islands in some survey years.

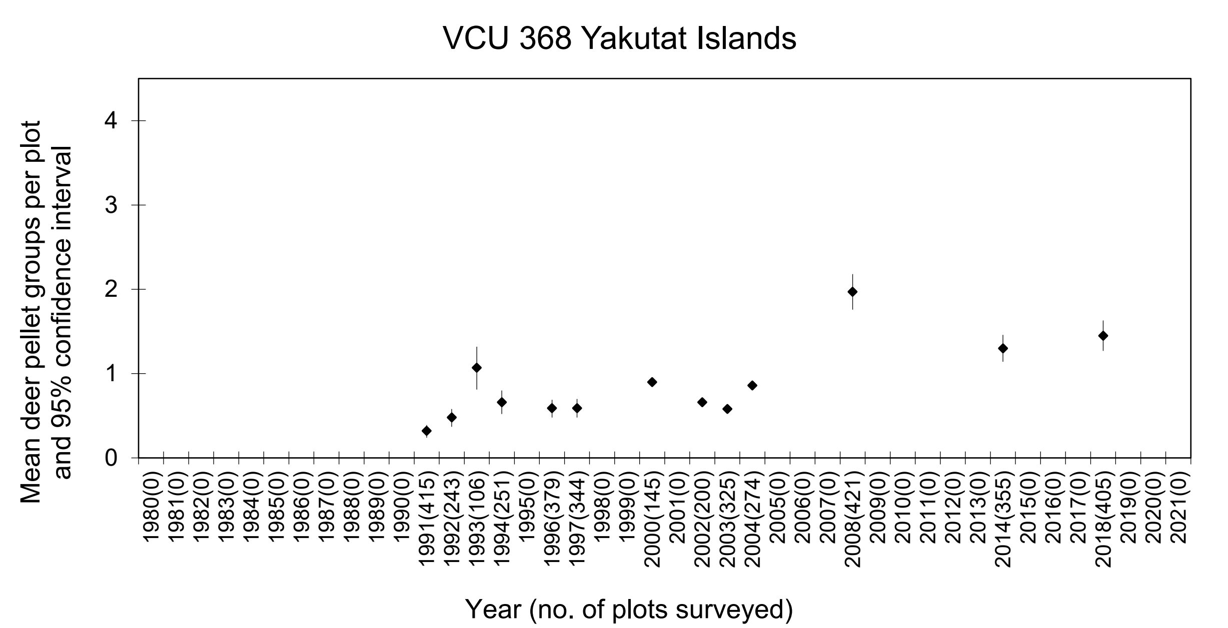



**Figure 71. Sitka black-tailed deer pellet-group densities in value comparison unit (VCU) 368, Yakutat Islands, 1980–2021. Zeros in parentheses (0) indicate that no surveys were conducted.**

## Summary

Pellet-group density has been used to monitor large-scale trends in deer densities in Southeast Alaska since the 1980s. During 2017–2021, it was used as an index to monitor population trends in both intensive management and deer management plans in Regions I and II.

Pellet group densities in Southeast Alaska were generally stable or increasing during 2017–2021. The most recent mean pellet-group trends were in the moderate to high density category, including 2 areas with introduced deer populations: Yakutat Islands in Unit 5A, and Sullivan Island in Unit 1C. Observed pellet-group densities indicate that Unit 4 continues to host the highest densities of deer compared to other units in Southeast Alaska.

Declining trends in pellet group counts on Revillagigedo Island and the Cleveland Peninsula in Unit 1A, Douglas Island in Unit 1C, and Pleasant Island in Unit 4 were exceptions to the regional trend for stable or increasing deer populations. MPGP trends on the Cleveland Peninsula increased but remained below the moderate levels observed during the 1980s and early 1990s.

Although many factors affect deer abundance, winter severity has the greatest regionwide influence, with declines documented by pellet-group density and other measures following winters with deep and persistent snow. In areas where wolves are present, deer populations tend to recover more slowly and persist at lower densities. High doe harvest can also be a limiting factor where populations have been depleted and hunting pressure is high. Deer pellet-group surveys have proven an effective means for quickly evaluating whether large changes (>30%) in deer abundance have occurred following changes in hunting regulations, the arrival of wolves, or severe winters.

## Future Management Direction by Richard Nelson[1] and Tom Schumacher[2]

As the agency charged with managing for sustainable harvest of Alaska's deer populations, ADF&G needs to understand and document how severe winters, hunting, predation, intensive management actions, and habitat and access changes resulting from logging affect deer populations. Although deer are the most common and widely distributed large mammal in Southeast Alaska, monitoring their populations in dense temperate rainforest is notoriously difficult. Along with harvest metrics and other metrics, since 1981 ADF&G has relied on pellet-group surveys as the primary tool to document relative abundance among management areas to monitor trends in deer populations throughout Region I. Consequently, pellet-group transects have been identified as a population monitoring method for decades of deer management plans, reports, and 2 intensive management programs.

The reliability of pellet-group counts as an index of abundance has been questioned. Overwinter snow conditions influence the distribution and concentration of deer on the landscape, and timing of pellet-group surveys relative to spring green up influences observers' ability to detect pellet groups. Both factors can confound interpretations of pellet group density and population trajectory. Further, the statistical power of pellet-group density to detect changes in deer abundance is often low, so only large changes in abundance can be reliably detected. However, because it is precisely these large changes in abundance that would precipitate management concern, pellet-group surveys were considered adequate for management. In Region I large changes in deer abundance most commonly result from severe winters. Those changes are not reflected in pellet group density until the second spring following the severe winter. Accordingly, interpreting patterns in pellet-group density requires knowledge of local conditions, and often considerable uncertainty remains.

Despite those drawbacks, ADF&G relied on pellet group surveys as its primary method of monitoring deer abundance because few practical alternatives existed. Along with harvest metrics, pellet-group data were presented to Fish and Game Advisory Committees, the Alaska Board of Game, the federal subsistence Southeast Regional Advisory Council, the Federal Subsistence Board, and the public as the best information available on trends in deer abundance. In conjunction with other information on deer abundance, pellet group data informed proposals for regulatory changes and contributed to sustainable harvest management of deer populations. However, ADF&G is committed to continually reviewing and updating survey methods to ensure we collect the best information possible in a practical and cost-effective manner.

As other methods of monitoring deer abundance were developed, ADF&G evaluated their potential for use across Region I. Advances in DNA technology enabled testing a fecal DNA mark–recapture method that estimated deer density within the effective sampling

[1] Management Coordinator, Region I, Division of Wildlife Conservation, Alaska Department of Fish and Game, Douglas.

[2] Regional Supervisor, Region I, Division of Wildlife Conservation, Alaska Department of Fish and Game, Douglas.

distance surrounding sampling plots. Region I also tested midsummer aerial surveys of deer seen in alpine habitat. The fecal DNA method was labor intensive, expensive, required long lab processing times, and was impractical for lower density deer populations. The density estimates produced only applied to a small proportion of the landscape resulting in questions about whether trends detected on that small area were representative of the islandwide or unitwide deer population. Aerial alpine surveys also had relatively low power to detect change, could only be used in areas with significant amounts of alpine habitat, required contracting planes and pilots from outside Region I, and at times produced trends that did not correspond with other indicators of deer abundance. Although both methods have utility under specific circumstances, neither was judged a practical or reliable method of monitoring deer across the region.

In recent years, wildlife researchers and area management biologists have recognized the potential of game cameras to gather information on species that inhabit densely forested environments, and camera-based monitoring programs are increasingly used in other states. Sampling and analytical approaches have been developed and continue to be refined. Also, evolving artificial intelligence applications can greatly reduce the task of sorting and categorizing the large quantities of photos generated by game camera arrays. An ADF&G wolf research project began investigating camera-based population estimation and monitoring methods in 2019, and area management biologists were intrigued. Ambivalence over pellet-group density as a population monitoring tool, practicality and advantages of camera-based methods, and a growing body of literature supporting those methods resulted in a unanimous recommendation by area management biologists to investigate a camera-based approach for monitoring the region's deer populations.

After discussing the available information and rationale for this recommendation with area management biologists, Region I leadership reached the following conclusions:

1. Changing the regionwide deer population monitoring program from one based on monitoring pellet-group density to one based on camera methods is reasonable and likely to have advantages for management. Some advantages of this change include expanding the window for gathering deer population information from a few weeks in the spring to year-round, reduced personnel and travel costs, a more robust quantitative framework for trend estimation, and the potential to simultaneously gather information on other species of management interest such as black and brown bears, wolves, and moose. Cameras can also detect the presence of uncommon species and document range expansions in the highly fragmented landscape of Southeast Alaska.

2. Region I leadership also accepted a second recommendation to focus population monitoring efforts on areas with greater access for hunting because those are the areas of greatest interest to hunters, where management issues are most likely to arise, and where changes in management are mostly likely to have an effect.

3. The practicality and performance of new population monitoring approaches should be evaluated over a period of years. Beginning in 2021 and for the next 5-years,

area management biologists will implement and evaluate camera-based methods as the primary regionwide field method for monitoring changes in deer abundance. We anticipate harvest metrics, published research findings, and an ongoing research project that will develop an integrated population model for deer on Mitkof Island will contribute toward evaluating camera-based methods.

4. Because no single method of monitoring trends in deer abundance is definitive or a good fit for all situations, area management biologists should consult 2 or more sources of information. In addition to camera-based methods and harvest metrics, body condition surveys, beach mortality transects, fecal DNA mark–recapture, aerial alpine surveys, and pellet-group transects should be retained as deer population monitoring tools available to area management biologists. Use of those tools should be at the discretion of each area biologist and the management coordinator, and their use should be reflected in federal aid project statements and 5-year species management reports and plans for deer.

## Acknowledgments

I wish to acknowledge and thank all of the individuals that have contributed to the collection and compilation of these data for more than 30 years. Unfortunately, there are too many names to include them all. Since its implementation in the early 1980s, deer pellet-group surveys have benefitted from the interest, dedication, and support of many ADF&G and USFS staff as well as community volunteers. I would like to extend special recognition to John Mathews, who conceived the project and implemented it during the first few years, 1981–1984. Matt Kirchhoff and Kenneth Pitcher compiled and analyzed data from 1981–1987, and in their 1988 report provided comprehensive documentation of objectives, methods, considerations, and limitations of these surveys. Mark Kirchhoff and Tom Paul worked on the project annually for many years, and Kirchhoff was lead author on reports during 1989–2003. Paul Converse coordinated the program and was the lead author on reports published in 2004–2006. Paul Converse and Matt Kirchhoff provided background and guidance for successful implementation of the project when I took over project management in 2007. I would also like to extend a special thanks to Lucas Baranovic, who has provided reliable wildlife technician support and field leadership for the program since 2011.

## References Cited


Brinkman, T. J., D. K. Person, F. S. Chapin III, W. Smith, and K. J. Hundertmark. 2011. Estimating abundance of Sitka black-tailed deer using DNA from fecal pellets. Journal of Wildlife Management 75(1):232–242. http://doi.org/10.1002/jwmg.22

Brinkman, T. J., D. K. Person, W. Smith, F. S. Chapin, K. McCoy, M. Leonawicz, and K. J. Hundertmark. 2013. Using DNA to test the utility of pellet-group counts as an index of deer counts. Wildlife Society Bulletin 37(2):444-450. http://doi.org/10.1002/wsb.270

Campbell, D., G. M. Swanson, and J. Sales. 2004. Comparing the precision and cost-effectiveness of faecal pellet-group count methods. Journal of Applied Ecology 41:1185–1196.

deCalesta, David S. 2013. Reliability and precision of pellet-group counts for estimating landscape-level deer density. Human-wildlife interactions 7(1):60–68.

Farmer, C. J., and D. K. Person. 1999. Effects of even-aged timber management on survivorship in Sitka black-tailed deer. Alaska Department of Fish and Game, Division of Wildlife Conservation, Federal Aid Research Progress Report 1 July 1998–30 June 1999, Federal Aid in Wildlife Restoration Study 14.16, Juneau.

Hanley, T. A. 1984. Relationships between Sitka black-tailed deer and their habitat. USDA Pacific Northwest Research Station General Technical Report PNW-GTR-168.

Hanley, T. A., and C. L. Rose. 1987. Influence of overstory on snow depth and density in hemlock spruce stands: implications for management of deer habitat in southeast Alaska. USDA Pacific Northwest Research Station General Technical Report PNW-GTR-230.

Hanley, T. A., C. T. Robbins, and D. E. Spalinger. 1989. Forest habitats and the nutritional ecology of Sitka black-tailed deer: A research synthesis with implications for forest management. U.S. Forest Service General Technical Report PNW-GTR-230, Portland, Oregon, USA.

Hemami, M. R., and P. M. Dolman. 2005. The disappearance of muntjac (*Muntiacus reevesi*) and roe deer (Capreolus capreolus) pellet groups in a pine forest of lowland England. European Journal Wildlife Research 51:19–24.

Keegan, T. W., B. B. Ackerman, A. N. Aode, L. C. Bender, T. Boudreau, L. H. Carpenter, B. B. Compton, M. Elmer, J. R. Heffelginger, D. W. Lutz, B. D. Trindle, B. F. Wakeling, and B. E. Watkins. 2001. Methods for monitoring mule deer populations. Mule Deer Working Group, Western Association of Fish and Wildlife Agencies, USA.

Kirchhoff, M. D. 1990. Evaluations of methods for assessing deer population trends in Southeast Alaska. Alaska Department of Fish and Game, Division of Wildlife Conservation, Federal Aid Research Final Report 1 January 1986–30 June 1990, Federal Aid in Wildlife Restoration Study 2.9, Juneau.

Kirchhoff, M. J. 1991. 1991 report: Deer pellet-group surveys in Southeast Alaska. Alaska Department of Fish and Game, Division of Wildlife Conservation, Annual Report, Federal Aid in Wildlife Restoration Project 2.0, Douglas.

Kirchhoff, M. D., and K. W. Pitcher. 1988. Deer pellet-group surveys in Southeast Alaska, 1981–1987. Alaska Department of Fish and Game, Division of Game. Federal Aid in Wildlife Restoration Progress Report Project W–22–6, Job 2.9, Juneau.

Kirchhoff, M. D., and J. W. Schoen. 1987. Forest cover and snow: Implications for deer habitat in Southeast Alaska. The Journal of Wildlife Management 51:28–33.

Klein, D. R., and S. T. Olsen. 1960. Natural mortality patterns of deer in Southeast Alaska. The Journal of Wildlife Management 24(1):80–88.

McCoy, K. R., G. W. Pendleton, and R. W. Flynn. 2014. Assessing population estimation protocols for Sitka black-tailed deer using DNA from fecal pellets. Alaska Department of Fish and Game, Final Wildlife Research Report. ADF&G/DWC/WRR-2014-1, Juneau.

McCoy, K. R., and D. P. Gregovich. 2021. Winter habitat selection by Sitka black-tailed deer on Chichagof Island, Southeast Alaska. Alaska Department of Fish and Game, Wildlife Research Report ADF&G/DWC/WRR-2021-1, Juneau.

National Oceanic and Atmospheric Administration (NOAA). 2022. NOAA online weather data [online database]. National Weather Service Forecast Office, Juneau, Alaska. https://www.weather.gov/wrh/Climate?wfo=ajk (Accessed April 2022).

Natural Resources Conservation Service (NRCS). 2022. Monthly snow data [online database]. National Weather and Climate Center, Natural Resources Conservation Service, U.S. Department of Agriculture. https://wcc.sc.egov.usda.gov/nwcc/rgrpt?report=snowmonth_hist&state=AK&operation=View (Accessed May 2022)

Parker, K. L., C. T. Robbins, and T. A. Hanley. 1984. Energy expenditures for locomotion by mule deer and elk. The Journal of Wildlife Management 48(2):474–488.

Paul, T. W. 2009. Game transplants in Alaska. Alaska Department of Fish and Game, Division of Wildlife Conservation, Technical bulletin No. 4, 2nd edition, Juneau.

Roffler, G. H., J. M. Allen, A. Massey, and T. Levi. 2021. Metabarcoding of fecal DNA shows dietary diversification in wolves substitutes for ungulates in an island archipelago. Ecosphere 12(1):e03297. https://doi.org/10.1002/ecs2.3297

Rose, C. L. 1982. Response of deer to forest succession on Annette Island, southeastern Alaska. Master's thesis, University of Alaska Fairbanks.

Schoen, J. W., and M. D. Kirchhoff. 1983. Seasonal distribution and habitat use by Sitka black-tailed deer in southeastern Alaska. Alaska Department of Fish and Game, Division of Game, Progress Report 1 July 1981–30 June 1982, Federal Aid in Wildlife Restoration Job 2.6R, Juneau.

Skalski, J. R., K. E. Ryding, and J. J. Millspaugh, editors. 2005. Wildlife demography: Analysis of Sex, Age, and Count Data. Academic Press, Burlington, Massachusetts. https://doi.org/10.1016/B978-012088773-6/50000-6

Smart, J. C. R., A. I. Ward, and P. C. L. White. 2004. Monitoring woodland deer populations in the UK: An imprecise science. Mammal Review 34:99–114.

U.S. Forest Service (USFS). 2016. Tongass land and resource management plan: Final environmental impact statement: Plan amendment. Vol 1: Analysis, and Vol 2: Appendices. Tongass National Forest R10-MB-769e and R10-MB-769f, Ketchikan, Alaska.

Wallmo, O. C., and J. W. Schoen. 1980. Responses of deer to secondary forest succession in Southeast Alaska. Forest Science 26:448–462.

## Appendix. Deer pellet-group count statistics, all years and locations.

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group Plots | Pellet group Mean | Pellet group 95% CI[b] |
|---|---|---|---|---|---|---|---|
| 20 | Comet | 9,662 | 12% | 1994 | 180 | 0.00 | 0.00, 0.00 |
| 27 | Auke Bay | 15,245 | 45% | 1987 | 381 | 0.99 | 0.87, 1.12 |
| 35 | North Douglas | 4,430 | 49% | 1991 | 300 | 0.80 | 0.65, 0.96 |
| | | | | 1993 | 324 | 0.74 | 0.62, 0.87 |
| | | | | 1994 | 315 | 0.91 | 0.74, 1.09 |
| | | | | 1995 | 306 | 0.86 | 0.70, 1.02 |
| | | | | 1996 | 323 | 0.97 | 0.80, 1.12 |
| | | | | 1997 | 323 | 1.43 | 1.24, 1.62 |
| | | | | 1998 | 321 | 1.54 | 1.32, 1.77 |
| | | | | 1999 | 273 | 1.03 | 0.86, 1.19 |
| | | | | 2000 | 282 | 0.88 | 0.71, 1.04 |
| | | | | 2001 | 335 | 1.01 | 0.85, 1.17 |
| | | | | 2002 | 200 | 0.68 | 0.50, 0.85 |
| | | | | 2003 | 267 | 0.93 | 0.77, 1.09 |
| | | | | 2004 | 288 | 1.52 | 1.28, 1.76 |
| | | | | 2005 | 151 | 2.08 | 1.61, 2.54 |
| | | | | 2006 | 263 | 2.02 | 1.74, 2.29 |
| | | | | 2007 | 165 | 2.28 | 1.83, 2.73 |
| | | | | 2008 | 316 | 2.84 | 2.49, 3.19 |
| | | | | 2009 | 220 | 1.85 | 1.57, 2.14 |
| | | | | 2010 | 312 | 1.07 | 0.89, 1.24 |
| | | | | 2011 | 328 | 1.53 | 1.30, 1.75 |
| | | | | 2012 | 253 | 1.21 | 1.02, 1.39 |
| | | | | 2013 | 306 | 1.56 | 1.38, 1.75 |
| | | | | 2014 | 242 | 0.83 | 0.69, 0.97 |
| | | | | 2015 | 323 | 1.04 | 0.83, 1.25 |
| | | | | 2016 | 328 | 0.77 | 0.64, 0.90 |
| | | | | 2017 | 318 | 0.98 | 0.84, 1.13 |
| | | | | 2018 | 257 | 0.82 | 0.64, 1.01 |
| | | | | 2019 | 196 | 1.19 | 0.95, 1.43 |
| | | | | 2020 | 256 | 0.57 | 0.41, 0.74 |
| 36 | Inner Point | 3,965 | 44% | 1985 | 256 | 1.30 | 1.10, 1.51 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group | | |
|---|---|---|---|---|---|---|---|
| | | | | | Plots | Mean | 95% CI[b] |
| | | | | 1986 | 235 | 1.97 | 1.68, 2.25 |
| | | | | 1985 | 256 | 1.30 | 1.10, 1.51 |
| | | | | 1987 | 262 | 1.76 | 1.53, 2.00 |
| | | | | 1988 | 200 | 1.21 | 1.02, 1.39 |
| | | | | 1989 | 258 | 1.31 | 1.08, 1.53 |
| | | | | 1992 | 204 | 2.05 | 1.75, 2.36 |
| | | | | 1995 | 254 | 1.41 | 1.21, 1.60 |
| | | | | 1996 | 240 | 1.68 | 1.45, 1.91 |
| | | | | 1997 | 252 | 2.36 | 2.08, 2.64 |
| | | | | 1998 | 280 | 0.84 | 0.69, 0.98 |
| | | | | 1999 | 239 | 1.06 | 0.87, 1.25 |
| | | | | 2000 | 280 | 1.09 | 0.90, 1.28 |
| | | | | 2002 | 198 | 0.82 | 0.64, 1.00 |
| | | | | 2003 | 272 | 0.76 | 0.60, 0.92 |
| | | | | 2004 | 242 | 0.88 | 0.68, 1.08 |
| | | | | 2006 | 147 | 2.33 | 1.93, 2.72 |
| | | | | 2007 | 182 | 2.10 | 1.70, 2.50 |
| | | | | 2008 | 232 | 1.59 | 1.32, 1.85 |
| | | | | 2009 | 268 | 1.44 | 1.20, 1.68 |
| | | | | 2010 | 263 | 1.52 | 1.30, 1.74 |
| | | | | 2011 | 267 | 2.12 | 1.81, 2.43 |
| | | | | 2013 | 250 | 2.41 | 2.12, 2.70 |
| | | | | 2014 | 267 | 1.55 | 1.37, 1.73 |
| | | | | 2015 | 277 | 1.50 | 1.29, 1.71 |
| | | | | 2016 | 239 | 1.01 | 0.80, 1.22 |
| | | | | 2017 | 271 | 1.16 | 0.96, 1.36 |
| | | | | 2018 | 313 | 1.12 | 0.91, 1.33 |
| | | | | 2019 | 266 | 0.85 | 0.70, 0.99 |
| 38 | Rhine Creek | 6,357 | 2% | 1997 | 108 | 0.31 | 0.14, 0.47 |
| 65 | Sumdum Glacier | 40,906 | 15% | 1987 | 262 | 1.76 | 1.53, 2.00 |
| 82 | Negro Creek | 12,212 | 31% | 1989 | 312 | 0.21 | 0.13, 0.29 |
| 89 | Farragut Bay | | | 1994 | 314 | 0.02 | 0.00, 0.04 |
| 94 | Sullivan Island | 3,985 | 78% | 1990 | 250 | 1.39 | 1.17, 1.62 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group | | |
|---|---|---|---|---|---|---|---|
| | | | | | Plots | Mean | 95% CI[b] |
| | | | | 2012 | 206 | 1.47 | 1.24, 1.70 |
| | | | | 2016 | 310 | 1.08 | 0.91, 1.26 |
| | | | | 2018 | 271 | 2.09 | 1.79, 2.39 |
| 117 | Couverden | 9,933 | 10% | 1993 | 350 | 0.35 | 0.27, 0.44 |
| 124a | Shelter Island | 6,162 | 43% | 1984 | 713 | 1.46 | 1.33, 1.60 |
| | (All Transects) | | | 1985 | 774 | 1.82 | 1.67, 1.97 |
| | | | | 1986 | 727 | 2.20 | 2.02, 2.37 |
| 124b | Shelter Island | | | 1984 | 300 | 1.52 | 1.34, 1.70 |
| | (Trans. 4–8, 18) | | | 1985 | 296 | 2.52 | 2.24, 2.81 |
| | | | | 1986 | 292 | 3.24 | 2.91, 3.57 |
| | | | | 1987 | 288 | 2.91 | 2.57, 3.24 |
| | | | | 1988 | 130 | 3.16 | 2.62, 3.70 |
| | | | | 1989 | 300 | 1.43 | 1.23, 1.62 |
| | | | | 1990 | 300 | 1.60 | 1.37, 1.82 |
| | | | | 1993 | 250 | 2.00 | 1.73, 2.26 |
| | | | | 1995 | 297 | 1.38 | 1.20, 1.56 |
| | | | | 1997 | 312 | 2.51 | 2.23, 2.78 |
| | | | | 1999 | 290 | 1.63 | 1.42, 1.85 |
| | | | | 2001 | 231 | 2.07 | 1.79, 2.36 |
| | | | | 2003 | 300 | 1.41 | 1.19, 1.63 |
| | | | | 2005 | 200 | 1.86 | 1.59, 2.13 |
| | | | | 2007 | 321 | 1.10 | 0.97, 1.41 |
| | | | | 2008 | 321 | 1.05 | 0.90, 1.21 |
| | | | | 2009 | 250 | 0.71 | 0.57, 0.84 |
| | | | | 2010 | 325 | 1.27 | 1.10, 1.44 |
| | | | | 2011 | 333 | 1.86 | 1.66, 2.07 |
| | | | | 2013 | 294 | 2.14 | 1.89, 2.39 |
| | | | | 2017 | 352 | 2.75 | 2.45, 3.04 |
| | | | | 2019 | 345 | 2.04 | 1.82, 2.26 |
| 124c | Lincoln Island | | | 1998 | 207 | 1.52 | 1.27, 1.77 |
| | | | | 2007 | 213 | 0.84 | 0.62, 1.06 |
| 125 | Barlow Cove | 13,712 | 24% | 1982 | 2,567 | 1.07 | 1.01, 1.12 |
| | | | | 1984 | 347 | 1.69 | 1.46, 1.92 |
| | | | | 1985 | 347 | 1.55 | 1.35, 1.76 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group Plots | Pellet group Mean | Pellet group 95% CI[b] |
|---|---|---|---|---|---|---|---|
| | | | | 1990 | 270 | 1.42 | 1.18, 1.65 |
| | | | | 2018 | 351 | 2.38 | 2.10, 2.66 |
| 127 | Calm Station | 4,941 | 66% | 1982 | 1,054 | 1.65 | 1.53, 1.77 |
| 128 | Hawk Inlet | 14,318 | 57% | 1982 | 1,605 | 1.21 | 0.99, 1.42 |
| | | | | 1984 | 339 | 1.42 | 1.22, 1.63 |
| | | | | 1985 | 270 | 1.69 | 1.43, 1.95 |
| | | | | 1986 | 286 | 1.92 | 1.64, 2.19 |
| | | | | 1987 | 278 | 2.54 | 2.19, 2.89 |
| | | | | 1989 | 364 | 1.82 | 1.56, 2.08 |
| | | | | 1990 | 250 | 2.24 | 1.94, 2.53 |
| | | | | 1992 | 319 | 1.61 | 1.38, 1.83 |
| | | | | 1996 | 325 | 1.26 | 1.07, 1.46 |
| | | | | 1999 | 176 | 1.25 | 1.00, 1.50 |
| | | | | 2002 | 183 | 1.17 | 0.93, 1.42 |
| | | | | 2005 | 322 | 2.69 | 2.30, 3.08 |
| | | | | 2007 | 305 | 1.19 | 0.97, 1.41 |
| | | | | 2008 | 290 | 1.33 | 1.12, 1.55 |
| | | | | 2009 | 207 | 1.35 | 1.06, 1.63 |
| | | | | 2017 | 279 | 2.13 | 1.83, 2.42 |
| 140 | Dorn Island | 9,485 | 81% | 1984 | 230 | 1.27 | 1.02, 1.53 |
| 148 | Lake Kathleen | 14,693 | 57% | 1987 | 207 | 2.13 | 1.76, 2.49 |
| 150 | Lake Florence | 21,342 | 52% | 1988 | 294 | 1.48 | 1.27, 1.69 |
| 162 | Thayer Lake | 25,342 | 79% | 1987 | 313 | 2.81 | 2.49, 3.12 |
| | | | | 1989 | 283 | 2.04 | 1.75, 2.32 |
| | | | | 1994 | 282 | 2.27 | 1.98, 2.56 |
| | | | | 1998 | 308 | 2.13 | 1.87, 2.38 |
| 171 | Hood Bay | 44,355 | 79% | 1987 | 358 | 2.31 | 1.99, 2.63 |
| | | | | 1989 | 366 | 1.77 | 1.54, 2.00 |
| | | | | 1990 | 375 | 1.85 | 1.61, 2.09 |
| | | | | 1992 | 360 | 1.91 | 1.64, 2.18 |
| | | | | 1994 | 371 | 1.64 | 1.41, 1.88 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group Plots | Mean | 95% CI[b] |
|---|---|---|---|---|---|---|---|
| | | | | 2000 | 349 | 1.04 | 0.87, 1.21 |
| | | | | 2003 | 220 | 1.41 | 1.17, 1.65 |
| | | | | 2006 | 355 | 2.76 | 2.50, 3.02 |
| | | | | 2008 | 301 | 1.62 | 1.37, 1.88 |
| 182 | Pybus Bay | 41,501 | 62% | 1981 | 390 | 1.34 | 1.16, 1.52 |
| | | | | 1984 | 300 | 1.02 | 0.86, 1.18 |
| | | | | 1985 | 269 | 1.86 | 1.60, 2.12 |
| | | | | 1986 | 235 | 2.00 | 1.70, 2.29 |
| | | | | 1987 | 242 | 2.03 | 1.69, 2.37 |
| | | | | 1989 | 199 | 2.00 | 1.63, 2.36 |
| | | | | 1990 | 221 | 1.72 | 1.44, 2.01 |
| | | | | 1992 | 236 | 1.13 | 0.97, 1.30 |
| | | | | 1995 | 205 | 1.48 | 1.23, 1.74 |
| | | | | 1998 | 256 | 1.37 | 1.16, 1.59 |
| | | | | 2019 | 234 | 2.82 | 2.47, 3.18 |
| 185 | Pleasant Island | 8,738 | 16% | 1991 | 311 | 1.38 | 1.18, 1.57 |
| | | | | 1992 | 210 | 1.34 | 1.09, 1.59 |
| | | | | 1993 | 305 | 1.77 | 1.52, 2.02 |
| | | | | 1994 | 356 | 1.22 | 1.04, 1.40 |
| | | | | 1997 | 300 | 1.80 | 1.54, 2.06 |
| | | | | 1999 | 223 | 1.82 | 1.55, 2.08 |
| | | | | 2002 | 351 | 1.96 | 1.71, 2.20 |
| | | | | 2005 | 312 | 1.33 | 1.11, 1.55 |
| | | | | 2009 | 291 | 0.72 | 0.60, 0.84 |
| | | | | 2015[c] | 180 | 1.34 | 1.09, 1.59 |
| | | | | 2016 | 351 | 0.37 | 0.28, 0.46 |
| | | | | 2017 | 323 | 0.12 | 0.07, 0.18 |
| | | | | 2018 | 344 | 0.00 | 0.00, 0.00 |
| | | | | 2021 | 310 | 0.00 | 0.00, 0.00 |
| 189 | Port Althorp | 8,040 | 27% | 1988 | 195 | 1.80 | 1.47, 2.13 |
| | | | | 1991 | 223 | 1.92 | 1.55, 2.29 |
| | | | | 1992 | 261 | 1.36 | 1.11, 1.60 |
| | | | | 1993 | 248 | 1.39 | 1.15, 1.62 |
| | | | | 1994 | 253 | 1.31 | 1.06, 1.56 |
| | | | | 1998 | 281 | 1.48 | 1.27, 1.70 |
| | | | | 2001 | 225 | 1.81 | 1.49, 2.13 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group | | |
|---|---|---|---|---|---|---|---|
| | | | | | Plots | Mean | 95% CI[b] |
| 190 | Idaho Inlet | 53,183 | 22% | 1988 | 258 | 1.34 | 1.09, 1.60 |
| | | | | 1992 | 219 | 0.94 | 0.69, 1.19 |
| | | | | 1993 | 305 | 0.56 | 0.45, 0.68 |
| | | | | 1994 | 294 | 0.71 | 0.58, 0.84 |
| | | | | 1998 | 273 | 1.11 | 0.92, 1.30 |
| | | | | 2001 | 308 | 0.94 | 0.78, 1.11 |
| | | | | 2004 | 296 | 1.05 | 0.85, 1.25 |
| 202 | Port Frederick | 16,619 | 52% | 1988 | 242 | 1.87 | 1.62, 2.13 |
| | | | | 1996 | 226 | 1.02 | 0.82, 1.23 |
| 208 | First No. 2 | 6,613 | 32% | 1983 | 1,155 | 1.12 | 1.01, 1.22 |
| 209 | Suntaheen Creek (Whitestone Harbor) | 13,198 | 49% | 1988 | 272 | 1.22 | 1.00, 1.44 |
| | | | | 1992 | 271 | 1.13 | 0.94, 1.33 |
| | | | | 1993 | 265 | 0.73 | 0.58, 0.88 |
| | | | | 1994 | 272 | 1.05 | 0.81, 1.29 |
| | | | | 1996 | 276 | 0.98 | 0.77, 1.18 |
| | | | | 1997 | 263 | 1.50 | 1.23, 1.77 |
| | | | | 1999 | 112 | 1.02 | 0.69, 1.34 |
| | | | | 2002 | 218 | 1.32 | 1.03, 1.60 |
| | | | | 2005 | 329 | 1.46 | 1.25, 1.66 |
| | | | | 2009 | 202 | 0.51 | 0.35, 0.67 |
| | | | | 2010 | 265 | 1.36 | 1.11, 1.61 |
| 211 | Point Augusta | 4,688 | 63% | 1983 | 757 | 1.78 | 1.62, 2.01 |
| | | | | 1993 | 286 | 2.08 | 1.80, 2.36 |
| | | | | 1997 | 234 | 3.30 | 2.90, 3.70 |
| 218 | Pavlof River | 18,866 | 50% | 1988 | 325 | 1.78 | 1.50, 2.06 |
| | | | | 1992 | 341 | 1.56 | 1.32, 1.81 |
| | | | | 1996 | 349 | 1.50 | 1.30, 1.70 |
| | | | | 1997 | 313 | 1.71 | 1.47, 1.94 |
| | | | | 1999 | 213 | 2.24 | 1.83, 2.67 |
| | | | | 2002 | 249 | 2.48 | 2.10, 2.87 |
| | | | | 2005 | 323 | 2.30 | 2.06, 2.55 |
| | | | | 2009 | 192 | 0.90 | 0.66, 1.15 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group Plots | Mean | 95% CI[b] |
|---|---|---|---|---|---|---|---|
| | | | | 2010 | 216 | 1.48 | 1.23, 1.72 |
| | | | | 2019 | 295 | 2.47 | 2.17, 2.78 |
| 221 | Whip Station | 4,708 | 53% | 1981 | 193 | 0.86 | 0.64, 1.08 |
| 222 | Sand Station | 12,231 | 50% | 1981 | 253 | 0.60 | 0.48, 0.73 |
| 223 | Upper Tenakee | 3,833 | 54% | 1988 | 253 | 1.47 | 1.24, 1.70 |
| | | | | 1992 | 265 | 0.58 | 0.47, 0.70 |
| | | | | 1993 | 249 | 0.47 | 0.36, 0.58 |
| | | | | 1994 | 319 | 0.61 | 0.48, 0.74 |
| | | | | 1996 | 263 | 0.56 | 0.38, 0.75 |
| 231 | Saltery Bay | 18,478 | 31% | 1988 | 256 | 2.02 | 1.69, 2.35 |
| | | | | 1992 | 256 | 0.96 | 0.79, 1.14 |
| | | | | 1993 | 227 | 0.76 | 0.56, 0.96 |
| | | | | 1994 | 193 | 0.97 | 0.79, 1.15 |
| | | | | 1996 | 152 | 1.90 | 1.47, 2.33 |
| | | | | 1997 | 170 | 1.99 | 1.59, 2.39 |
| 234 | In Between | 6,002 | 62% | 1981 | 35 | 0.49 | 0.08, 0.89 |
| 235 | Kadashan | 33,641 | 53% | 1981 | 96 | 0.54 | 0.32, 0.76 |
| | | | | 1988 | 221 | 2.67 | 2.18, 3.16 |
| | | | | 1992 | 282 | 1.62 | 1.38, 1.86 |
| | | | | 1993 | 385 | 1.12 | 0.95, 1.30 |
| | | | | 1994 | 294 | 1.39 | 1.18, 1.60 |
| | | | | 1995 | 195 | 2.64 | 2.20, 3.07 |
| | | | | 1996 | 204 | 2.36 | 1.96, 2.76 |
| | | | | 2009 | 137 | 0.99 | 0.75, 1.24 |
| 236 | Corner Bay | 10,930 | 66% | 1981 | 60 | 0.35 | 0.17, 0.53 |
| | | | | 1992 | 206 | 2.27 | 1.91, 2.64 |
| | | | | 1993 | 50 | 1.72 | 1.25, 2.19 |
| | | | | 1994 | 198 | 1.69 | 1.41, 1.98 |
| 246 | Broad Island | 17,145 | 38% | 1981 | 209 | 1.41 | 1.18, 1.63 |
| 247 | Finger Mountain | 15,918 | 38% | 1983 | 2,145 | 1.17 | 1.11, 1.24 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group | | |
|---|---|---|---|---|---|---|---|
| | | | | | Plots | Mean | 95% CI[b] |
| | | | | 1984 | 302 | 1.83 | 1.57, 2.09 |
| | | | | 1985 | 279 | 3.23 | 2.79, 3.67 |
| | | | | 1986 | 277 | 2.88 | 2.57, 3.19 |
| | | | | 1987 | 236 | 3.11 | 2.71, 3.52 |
| | | | | 1989 | 305 | 2.99 | 2.57, 3.40 |
| | | | | 1990 | 225 | 3.36 | 2.99, 3.74 |
| | | | | 1991 | 150 | 3.93 | 3.36, 4.51 |
| | | | | 1992 | 207 | 2.85 | 2.48, 3.22 |
| | | | | 1993 | 179 | 3.03 | 2.60, 3.47 |
| | | | | 1994 | 275 | 2.29 | 1.96, 2.62 |
| | | | | 1996 | 221 | 2.62 | 2.20, 3.04 |
| | | | | 1997 | 227 | 3.53 | 3.05, 4.02 |
| | | | | 1999 | 169 | 3.04 | 2.59, 3.50 |
| | | | | 2000 | 217 | 2.87 | 2.45, 3.30 |
| | | | | 2002 | 162 | 2.99 | 2.37, 3.60 |
| | | | | 2004 | 229 | 3.03 | 2.67, 3.39 |
| | | | | 2005 | 299 | 2.79 | 2.45, 3.13 |
| | | | | 2006 | 280 | 2.58 | 2.24, 2.92 |
| | | | | 2007 | 248 | 1.89 | 1.65, 2.13 |
| | | | | 2008 | 199 | 3.32 | 2.87, 3.78 |
| | | | | 2010 | 217 | 2.53 | 2.12, 2.94 |
| | | | | 2011 | 209 | 4.13 | 3.48, 4.78 |
| | | | | 2015 | 197 | 1.86 | 1.58, 2.14 |
| | | | | 2017 | 217 | 4.28 | 3.76, 4.79 |
| | | | | 2018 | 261 | 3.61 | 3.14, 4.09 |
| 249 | Lisianski | 19,677 | 24% | 1988 | 255 | 0.97 | 0.79, 1.14 |
| | | | | 1991 | 170 | 1.53 | 1.22, 1.84 |
| | | | | 1995 | 317 | 0.70 | 0.56, 0.85 |
| | | | | 1998 | 321 | 0.88 | 0.75, 1.02 |
| 254 | Soapstone | 17,695 | 29% | 1988 | 274 | 1.92 | 1.67, 2.17 |
| | | | | 1991 | 270 | 2.05 | 1.77, 2.33 |
| | | | | 1993 | 243 | 1.88 | 1.59, 2.16 |
| | | | | 1994 | 310 | 1.34 | 1.16, 1.52 |
| | | | | 1995 | 283 | 1.48 | 1.27, 1.69 |
| | | | | 2001 | 246 | 1.95 | 1.65, 2.25 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group Plots | Mean | 95% CI[b] |
|---|---|---|---|---|---|---|---|
| 271 | Chichagof (Klag Bay) | 20,680 | 10% | 1991 | 301 | 1.39 | 1.19, 1.58 |
| | | | | 1995 | 303 | 0.98 | 0.83, 1.14 |
| | | | | 1998 | 319 | 1.34 | 1.16, 1.53 |
| | | | | 2001 | 291 | 1.23 | 1.04, 1.43 |
| | | | | 2004 | 303 | 1.15 | 0.99, 1.31 |
| | | | | 2007 | 275 | 0.81 | 0.67, 0.95 |
| 275 | Cobol | 14,618 | 49% | 1984 | 224 | 1.15 | 0.92, 1.37 |
| | | | | 1991 | 185 | 2.96 | 2.37, 3.54 |
| | | | | 1995 | 218 | 1.45 | 1.16, 1.74 |
| | | | | 1998 | 219 | 2.19 | 1.86, 2.51 |
| | | | | 2001 | 180 | 1.94 | 1.59, 2.30 |
| | | | | 2004 | 232 | 2.97 | 2.48, 3.46 |
| | | | | 2007 | 176 | 2.13 | 1.69, 2.56 |
| 279 | Rapids Point | 7,637 | 65% | 1983 | 2,734 | 0.77 | 0.73, 0.81 |
| 281 | Ushk Bay | 20,770 | 38% | 1981 | 94 | 0.63 | 0.41, 0.85 |
| 288 | Range Creek | 6,929 | 33% | 1983 | 1,788 | 0.51 | 0.46, 0.55 |
| | | | | 1984 | 303 | 0.71 | 0.61, 0.92 |
| | | | | 1985 | 224 | 1.32 | 1.02, 1.62 |
| | | | | 1997 | 353 | 1.44 | 1.21, 1.67 |
| | | | | 2003 | 355 | 1.65 | 1.43, 1.87 |
| | | | | 2006 | 359 | 1.82 | 1.57, 2.06 |
| | | | | 2010 | 341 | 1.06 | 0.88, 1.24 |
| | | | | 2017 | 375 | 2.01 | 1.74, 2.29 |
| 295 | Lake Eva | 12,362 | 65% | 1987 | 172 | 1.81 | 1.46, 2.15 |
| 296 | Portage Arm | 16,101 | 59% | 1981 | 213 | 0.53 | 0.39, 0.68 |
| | | | | 1990 | 214 | 3.09 | 2.70, 3.48 |
| | | | | 1997 | 39 | 1.59 | 0.86, 2.32 |
| | | | | 2003 | 103 | 2.77 | 2.28, 3.26 |
| 298 | Middle Arm Kelp Bay | 28,424 | 21% | 1990 | 306 | 2.68 | 2.35, 3.01 |
| | | | | 1997 | 100 | 2.67 | 2.04, 3.30 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group Plots | Mean | 95% CI[b] |
|---|---|---|---|---|---|---|---|
| | | | | 2003 | 140 | 1.41 | 1.12, 1.70 |
| | | | | 2006 | 248 | 2.10 | 1.83, 2.38 |
| | | | | 2008 | 208 | 1.91 | 1.63, 2.19 |
| | | | | 2019 | 257 | 2.44 | 2.14, 2.74 |
| 300a | Nakwasina (all transects) | 19,575 | 48% | 1984 | 196 | 2.51 | 2.14, 2.88 |
| | | | | 1985 | 1,046 | 3.92 | 3.67, 4.17 |
| | | | | 1986 | 715 | 3.50 | 3.26, 3.76 |
| 300b | Nakwasina (Transects T2, T3, T8) | 19,575 | 48% | 1984 | 138 | 2.51 | 2.10, 2.93 |
| | | | | 1985 | 218 | 3.65 | 3.13, 4.17 |
| | | | | 1986 | 205 | 3.38 | 2.91, 3.84 |
| | | | | 1987 | 195 | 2.31 | 1.90, 2.71 |
| | | | | 1989 | 244 | 2.32 | 2.00, 2.65 |
| | | | | 1990 | 255 | 2.98 | 2.56, 3.40 |
| | | | | 1991 | 175 | 3.98 | 3.39, 4.57 |
| | | | | 1992 | 223 | 1.64 | 1.37, 1.90 |
| | | | | 1993 | 188 | 3.15 | 2.70, 3.60 |
| | | | | 1994 | 230 | 1.46 | 1.24, 1.68 |
| | | | | 1995 | 216 | 1.75 | 1.48, 2.10 |
| | | | | 1996 | 210 | 2.82 | 2.35, 3.29 |
| | | | | 1997 | 188 | 2.79 | 2.31, 3.27 |
| | | | | 1998 | 217 | 2.99 | 2.48, 3.49 |
| | | | | 1999 | 146 | 3.20 | 2.64, 3.76 |
| | | | | 2000 | 181 | 2.64 | 2.23, 3.05 |
| | | | | 2001 | 186 | 2.33 | 1.91, 2.75 |
| | | | | 2002 | 132 | 2.35 | 1.90, 2.80 |
| | | | | 2003 | 221 | 3.09 | 2.68, 3.50 |
| | | | | 2004 | 211 | 3.36 | 3.02, 3.70 |
| | | | | 2005 | 254 | 2.22 | 1.91, 2.52 |
| | | | | 2006 | 205 | 3.91 | 3.42, 4.40 |
| | | | | 2007 | 167 | 3.40 | 2.90, 3.89 |
| | | | | 2008 | 166 | 3.17 | 2.66, 3.68 |
| | | | | 2010 | 183 | 2.77 | 2.42, 3.12 |
| | | | | 2011 | 192 | 3.87 | 3.11, 4.63 |
| | | | | 2015 | 207 | 2.02 | 1.71, 2.34 |
| | | | | 2017 | 230 | 3.76 | 3.23, 4.29 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group Plots | Mean | 95% CI[b] |
|---|---|---|---|---|---|---|---|
| | | | | 2018 | 229 | 3.24 | 2.76, 3.73 |
| 305 | Kalinin Bay (Sea Lion Cove) | 9,293 | 69% | 1984 | 320 | 1.36 | 1.15, 1.58 |
| | | | | 1985 | 292 | 2.57 | 2.23, 2.91 |
| | | | | 1986 | 235 | 2.87 | 2.44, 3.29 |
| | | | | 1987 | 226 | 3.31 | 2.82, 3.80 |
| | | | | 1989 | 303 | 1.75 | 1.50, 2.00 |
| | | | | 1990 | 227 | 2.03 | 1.71, 2.35 |
| | | | | 1991 | 219 | 1.63 | 1.36, 1.91 |
| | | | | 1992 | 239 | 1.30 | 1.08, 1.51 |
| | | | | 1993 | 198 | 1.70 | 1.38, 2.02 |
| | | | | 1994 | 221 | 1.29 | 1.09, 1.48 |
| | | | | 1995 | 210 | 1.30 | 1.08, 1.52 |
| | | | | 1996 | 225 | 1.63 | 1.35, 1.90 |
| | | | | 1997 | 223 | 1.76 | 1.43, 2.10 |
| | | | | 1998 | 241 | 1.71 | 1.44, 1.99 |
| | | | | 2000 | 201 | 1.42 | 1.09, 1.76 |
| | | | | 2001 | 231 | 1.40 | 1.14, 1.66 |
| | | | | 2002 | 119 | 2.01 | 1.60, 2.41 |
| | | | | 2003 | 249 | 1.90 | 1.55, 2.25 |
| | | | | 2004 | 206 | 1.13 | 0.90, 1.36 |
| | | | | 2005 | 252 | 1.40 | 1.20, 1.61 |
| | | | | 2006 | 245 | 1.41 | 1.18, 1.65 |
| | | | | 2007 | 221 | 0.95 | 0.73, 1.16 |
| | | | | 2008 | 159 | 1.44 | 1.15, 1.73 |
| | | | | 2010 | 249 | 1.04 | 0.83, 1.24 |
| | | | | 2011 | 232 | 1.58 | 1.25, 1.91 |
| | | | | 2015 | 219 | 1.31 | 1.08, 1.54 |
| | | | | 2017 | 248 | 1.91 | 1.63, 2.18 |
| | | | | 2018 | 257 | 1.46 | 1.22, 1.69 |
| 308 | South Kruzof | 71,158 | 25% | 1993 | 345 | 1.62 | 1.41, 1.83 |
| | | | | 1994 | 370 | 1.71 | 1.52, 1.90 |
| | | | | 1999 | 365 | 1.38 | 1.16, 1.58 |
| 315 | Basin Kelp Bay | 8,460 | 60% | 1990 | 151 | 1.85 | 1.41, 2.28 |
| 321 | Redoubt Bay | 9,045 | 58% | 1989 | 304 | 2.17 | 1.88, 2.47 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group | | |
|---|---|---|---|---|---|---|---|
| | | | | | Plots | Mean | 95% CI[b] |
| 339 | Cape Ommaney | 13,725 | 32% | 1988 | 172 | 1.74 | 1.43, 2.05 |
| | | | | 2000 | 270 | 1.26 | 1.02, 1.49 |
| | | | | 2003 | 221 | 1.56 | 1.31, 1.81 |
| 344 | Whale Bay | | | 2000 | 260 | 1.40 | 1.17, 1.62 |
| | | | | 2003 | 279 | 1.70 | 1.43, 1.97 |
| 348 | West Crawfish | 57,434 | 16% | 1989 | 360 | 1.35 | 1.36, 1.57 |
| | | | | 2000 | 211 | 1.34 | 1.07, 1.61 |
| 348 | West Crawfish (cont.) | 57,434 | 16% | 2003 | 313 | 1.31 | 1.07, 1.55 |
| 361 | Knight Island | 10,419 | 40% | 1991 | 100 | 0.81 | 0.61, 1.01 |
| | | | | 1992 | 100 | 0.95 | 0.74, 1.16 |
| | | | | 1994 | 90 | 0.44 | 0.25, 0.64 |
| | | | | 1996 | 153 | 0.00 | 0.00, 0.00 |
| | | | | 1997 | 192 | 0.03 | 0.01, 0.05 |
| | | | | 2003 | 117 | 0.22 | – |
| 363 | Humpback | 7,721 | 74% | 1991 | 118 | 0.01 | 0.00, 0.03 |
| 368 | Yakutat Islands | 1,021 | 99% | 1991 | 415 | 0.32 | 0.24, 0.39 |
| | | | | 1992 | 243 | 0.48 | 0.37, 0.58 |
| | | | | 1993 | 106 | 1.07 | 0.81, 1.32 |
| | | | | 1994 | 251 | 0.66 | 0.52, 0.80 |
| | | | | 1996 | 379 | 0.59 | 0.48, 0.69 |
| | | | | 1997 | 344 | 0.59 | 0.48, 0.70 |
| | | | | 2000 | 145 | 0.90 | 0.85, 0.95 |
| | | | | 2002 | 200 | 0.66 | – |
| | | | | 2003 | 325 | 0.58 | – |
| | | | | 2004 | 274 | 0.86 | – |
| | | | | 2008 | 421 | 1.97 | 1.76, 2.18 |
| | | | | 2014 | 355 | 1.30 | 1.14, 1.46 |
| | | | | 2018 | 405 | 1.45 | 1.27, 1.63 |
| 369 | Ankau | | | 1991 | 116 | 0.03 | 0.00, 0.05 |
| 400 | Security Bay | 28,040 | 79% | 1984 | 360 | 0.02 | 0.01, 0.04 |
| | | | | 1989 | 304 | 0.25 | 0.16, 0.34 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group Plots | Mean | 95% CI[b] |
|---|---|---|---|---|---|---|---|
| | | | | 1995 | 268 | 0.22 | 0.15, 0.29 |
| | | | | 2000 | 200 | 0.09 | 0.05, 0.14 |
| 403 | Pillar Bay | 28,227 | 65% | 1988 | 337 | 0.16 | 0.10, 0.22 |
| | | | | 2000 | 265 | 0.18 | 0.13, 0.23 |
| 408 | Malmesbury | 18,151 | 68% | 1990 | 206 | 0.11 | 0.05, 0.18 |
| | | | | 2000 | 254 | 0.06 | 0.03, 0.09 |
| 417 | Conclusion Island | 12,561 | 99% | 1987 | 207 | 2.66 | 2.32, 3.01 |
| | | | | 1989 | 200 | 0.95 | 0.72, 1.18 |
| | | | | 1991 | 200 | 0.71 | 0.53, 0.88 |
| | | | | 1996 | 191 | 1.45 | 1.19, 1.70 |
| 427 | Big John Bay | 32,711 | 29% | 1994 | 300 | 0.38 | 0.29, 0.48 |
| 428 | Rocky Pass | 49,403 | 35% | 1989 | 298 | 0.40 | 0.27, 0.53 |
| 431 | Point Barrie | 22,187 | 27% | 1988 | 357 | 0.23 | 0.17, 0.29 |
| | | | | 1993 | 375 | 0.77 | 0.64, 0.90 |
| 434a | Big Level Island | 727 | 61% | 1981 | 399 | 1.54 | 1.45, 1.63 |
| | | | | 1983 | 336 | 1.56 | – |
| | | | | 1986 | 382 | 1.66 | 1.41, 1.90 |
| | | | | 1989 | 227 | 1.07 | |
| | | | | 1991 | 456 | 2.16 | 1.90, 2.41 |
| | | | | 1999 | 427 | 2.00 | 1.74, 2.26 |
| 434b | Little Level Island | 263 | 92% | 1981 | 114 | 2.48 | 2.02, 2.94 |
| | | | | 1983 | 136 | 2.34 | – |
| | | | | 1986 | 122 | 1.39 | 1.07, 1.70 |
| | | | | 1989 | 137 | 1.52 | – |
| | | | | 1991 | 132 | 3.59 | 3.07, 4.11 |
| | | | | 1999 | 123 | 2.84 | 2.28, 3.40 |
| 435 | Castle River | 32,724 | 36% | 1984 | 312 | 0.19 | 0.12, 0.26 |
| | | | | 1987 | 305 | 0.51 | 0.37, 0.65 |
| | | | | 1989 | 312 | 0.40 | 0.25, 0.56 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group Plots | Mean | 95% CI[b] |
|---|---|---|---|---|---|---|---|
| | | | | 1994 | 310 | 0.32 | 0.24, 0.40 |
| | | | | 1998 | 281 | 0.36 | 0.28, 0.44 |
| | | | | 2008 | 275 | 0.12 | 0.07, 0.17 |
| | | | | 2013 | 268 | 0.15 | 0.10, 0.21 |
| | | | | 2018 | 290 | 0.52 | 0.41, 0.63 |
| 437 | East Duncan | 23,744 | 55% | 1990 | 227 | 1.12 | 0.92–1.32 |
| | | | | 1992 | 213 | 0.78 | 0.63–0.94 |
| | | | | 1998 | 153 | 1.04 | 0.77–1.30 |
| | | | | 2002 | 254 | 1.89 | 1.59–2.19 |
| | | | | 2008 | 262 | 1.37 | 1.10–1.65 |
| | | | | 2011 | 289 | 0.64 | 0.51–0.77 |
| | | | | 2012 | 282 | 0.60 | 0.47–0.73 |
| | | | | 2013 | 263 | 0.56 | 0.40–0.71 |
| | | | | 2014[d] | 354 | 0.47 | 0.33–0.61 |
| | | | | 2015 | 281 | 0.60 | 0.48–0.72 |
| | | | | 2016 | 268 | 0.50 | 0.38–0.61 |
| | | | | 2017 | 279 | 1.01 | 0.80, 1.22 |
| | | | | 2018 | 287 | 1.25 | 1.05, 1.46 |
| | | | | 2019 | 267 | 1.17 | 0.94, 1.40 |
| 442 | Portage Bay | 11,269 | 49% | 1993 | 282 | 0.43 | 0.31, 0.56 |
| | | | | 1995 | 277 | 0.43 | 0.33, 0.53 |
| | | | | 1998 | 285 | 0.39 | 0.29, 0.49 |
| | | | | 2012 | 230 | 0.63 | 0.50, 0.77 |
| | | | | 2013 | 233 | 0.24 | 0.16, 0.32 |
| | | | | 2015 | 233 | 0.40 | 0.30, 0.51 |
| | | | | 2016 | 252 | 0.46 | 0.35, 0.56 |
| | | | | 2017 | 251 | 0.40 | 0.29, 0.52 |
| | | | | 2019 | 231 | 1.10 | 0.86, 1.33 |
| 448 | Mitkof (Woewodski) | 20,931 | 53% | 1984 | 295 | 0.88 | 0.69, 1.08 |
| | | | | 1985 | 209 | 0.85 | 0.58, 0.85 |
| | | | | 1987 | 195 | 1.65 | 1.36, 1.94 |
| | | | | 1988 | 433 | 1.33 | 1.16, 1.51 |
| | | | | 1989 | 417 | 1.35 | 1.24, 1.73 |
| | | | | 1990 | 355 | 1.46 | 1.28, 1.64 |
| | | | | 1991 | 316 | 1.80 | 1.52, 2.07 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group Plots | Mean | 95% CI[b] |
|---|---|---|---|---|---|---|---|
| | | | | 1992 | 248 | 0.79 | 0.62, 0.97 |
| | | | | 1993 | 230 | 1.06 | 0.85, 1.27 |
| | | | | 1994 | 152 | 1.14 | 0.82, 1.46 |
| | | | | 1995 | 157 | 1.38 | 1.08, 1.67 |
| | | | | 1996 | 243 | 2.25 | 1.95, 2.55 |
| | | | | 1997 | 282 | 1.56 | 1.27, 1.84 |
| | | | | 1998 | 282 | 1.10 | 0.91, 1.29 |
| | | | | 1999 | 196 | 1.36 | 1.11, 1.60 |
| | | | | 2000 | 226 | 1.27 | 1.05, 1.50 |
| | | | | 2002 | 220 | 1.43 | 1.17, 1.68 |
| | | | | 2003 | 216 | 0.50 | 0.36, 0.64 |
| | | | | 2004 | 250 | 1.06 | 0.87, 1.25 |
| | | | | 2005 | 279 | 0.82 | 0.65, 0.98 |
| | | | | 2007 | 180 | 1.63 | 1.26, 2.00 |
| | | | | 2008 | 235 | 1.06 | 0.83, 1.28 |
| | | | | 2009 | 162 | 0.98 | 0.74, 1.22 |
| | | | | 2010 | 234 | 0.81 | 0.63, 0.98 |
| | | | | 2011 | 232 | 0.74 | 0.58, 0.89 |
| | | | | 2012 | 229 | 0.74 | 0.56, 0.92 |
| | | | | 2013 | 220 | 0.64 | 0.50, 0.77 |
| | | | | 2014 | 225 | 0.76 | 0.58, 0.93 |
| | | | | 2015 | 284 | 0.63 | 0.49, 0.76 |
| | | | | 2016 | 235 | 0.71 | 0.55, 0.86 |
| | | | | 2017 | 246 | 1.02 | 0.82, 1.23 |
| | | | | 2018 | 265 | 1.77 | 1.49, 2.04 |
| | | | | 2019 | 244 | 1.21 | 0.96, 1.46 |
| 448a | Woewodski Island | 20,931 | 53% | 1991 | 461 | 1.86 | 1.66, 2.05 |
| | | | | 1994 | 510 | 1.30 | 1.15, 1.46 |
| 449 | Frederick | 6,835 | 70% | 1981 | 945 | 0.08 | 0.06, 0.11 |
| | | | | 1990 | 180 | 0.55 | 0.36, 0.74 |
| | | | | 1992 | 227 | 0.54 | 0.42, 0.65 |
| 452 | Blind Slough | 30,655 | 55% | 1990 | 324 | 1.35 | 1.15, 1.56 |
| | | | | 1992 | 114 | 1.04 | 0.77, 1.30 |
| | | | | 1993 | 265 | 1.28 | 1.04, 1.51 |
| | | | | 1997 | 245 | 1.61 | 1.34, 1.88 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group Plots | Mean | 95% CI[b] |
|---|---|---|---|---|---|---|---|
| 454 | Dry | 11,033 | 74% | 1981 | 91 | 0.92 | 0.56, 1.28 |
| | | | | 1993 | 210 | 1.44 | 1.17, 1.72 |
| | | | | 1997 | 188 | 1.26 | 0.88, 1.39 |
| 455 | Vank | 8,437 | 99% | | | | |
| 455a | Sokolof | | | 1981 | 900 | 1.73 | 1.61, 1.85 |
| | | | | 1999 | 360 | 0.92 | 0.76, 1.08 |
| 455b | Rynda | | | 1981 | 281 | 0.25 | 0.18, 0.32 |
| 455c | Greys | | | 1999 | 280 | 0.27 | 0.18, 0.36 |
| | | | | 1981 | 284 | 0.25 | 0.18, 0.32 |
| 456 | Baht | 16,972 | 69% | 2002 | 109 | 2.75 | 2.10, 3.41 |
| | | | | 2004 | 108 | 1.80 | 1.45, 2.15 |
| | | | | 2005 | 101 | 2.12 | 1.73, 2.51 |
| | | | | 2007 | 108 | 1.51 | 1.14, 1.88 |
| | | | | 2009 | 125 | 1.19 | 0.86, 1.52 |
| 457 | St. John | 26,112 | 53% | 2002 | 220 | 1.65 | 1.38, 1.93 |
| | | | | 2004 | 229 | 1.17 | 0.96, 1.38 |
| | | | | 2005 | 213 | 1.75 | 1.44, 2.03 |
| | | | | 2007 | 211 | 1.98 | 1.65, 2.31 |
| | | | | 2009 | 225 | 0.99 | 0.81, 1.17 |
| 458 | Snow Passage | 31,572 | 46% | 1994 | 345 | 0.58 | 0.45, 0.70 |
| | | | | 1997 | 315 | 0.98 | 0.80, 1.16 |
| | | | | 2002 | 280 | 1.50 | 1.28, 1.72 |
| | | | | 2004 | 306 | 1.02 | 0.84, 1.20 |
| | | | | 2005 | 262 | 1.08 | 0.89, 1.27 |
| | | | | 2007 | 289 | 1.52 | 1.26, 1.78 |
| 459 | Meter | 42,438 | 46% | 2002 | 180 | 0.87 | 0.64, 1.10 |
| | | | | 2004 | 180 | 0.89 | 0.68, 1.10 |
| | | | | 2005 | 155 | 1.41 | 1.07, 1.75 |
| | | | | 2009 | 80 | 2.29 | 1.33, 3.24 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group Plots | Mean | 95% CI[b] |
|---|---|---|---|---|---|---|---|
| 461a | Woronkofski (All Transects) | 14,500 | 63% | 1985 | 646 | 1.63 | 1.45, 1.81 |
| 461b | Woronkofski (Trans. 10,11,12) | | | 1985 | 218 | 2.01 | 1.62, 2.39 |
| | | | | 1987 | 201 | 2.23 | 1.85, 2.61 |
| | | | | 1989 | 223 | 2.52 | 2.18, 2.85 |
| | | | | 1991 | 203 | 1.59 | 1.32, 1.85 |
| | | | | 1993 | 225 | 0.22 | 0.13, 0.31 |
| | | | | 1994 | 224 | 0.26 | 0.18, 0.34 |
| | | | | 1999 | 216 | 0.11 | 0.06, 0.17 |
| | | | | 2004 | 227 | 0.08 | 0.03, 0.13 |
| 467 | Mosman | 25,573 | 54% | 1993 | 304 | 0.07 | 0.03, 0.11 |
| 473 | Onslow | 28,947 | 55% | 1984 | 321 | 0.37 | 0.28, 0.46 |
| | | | | 1985 | 334 | 0.59 | 0.48, 0.70 |
| | | | | 1986 | 347 | 0.72 | 0.59, 0.84 |
| | | | | 1987 | 336 | 0.42 | 0.31, 0.55 |
| | | | | 1988 | 329 | 0.44 | 0.32, 0.55 |
| | | | | 1991 | 322 | 0.66 | 0.51, 0.80 |
| | | | | 1993 | 341 | 0.68 | 0.55, 0.82 |
| | | | | 1994 | 340 | 0.88 | 0.74, 1.02 |
| | | | | 1997 | 346 | 0.73 | 0.59, 0.86 |
| | | | | 2002 | 332 | 0.97 | 0.81, 1.13 |
| | | | | 2006 | 363 | 0.60 | 0.48, 0.71 |
| | | | | 2008 | 339 | 1.33 | 1.13, 1.53 |
| | | | | 2010 | 366 | 0.96 | 0.81, 1.10 |
| 474 | Fisherman's Cove (Canoe) | | | 2001 | 228 | 0.11 | 0.06, 0.17 |
| 480 | Fools Inlet | 30,906 | 44% | 1994 | 194 | 0.54 | 0.38, 0.70 |
| | | | | 2001 | 201 | 0.61 | 0.45, 0.77 |
| 489 | Muddy River | 40,275 | 37% | 1996 | 348 | 1.53 | 1.26, 1.80 |
| 490 | Horn | 9,815 | 55% | 1998 | 250 | 0.60 | 0.47, 0.74 |
| | | | | 2003 | 290 | 0.67 | 0.53, 0.81 |
| 504 | Madan | | 60% | 2001 | 244 | 0.23 | 0.14, 0.31 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group | | |
|---|---|---|---|---|---|---|---|
| | | | | | Plots | Mean | 95% CI[b] |
| 511 | Harding | | 20% | 2001 | 207 | 0.02 | 0.00, 0.05 |
| 524 | Frosty Bay | 17,959 | 41% | 1991 | 266 | 0.70 | 0.55, 0.86 |
| 527 | Protection | 6,257 | 100% | 1997 | 332 | 1.15 | 0.99, 1.30 |
| | | | | 1998 | 281 | 0.59 | 0.47, 0.71 |
| | | | | 2000 | 325 | 0.56 | 0.46, 0.66 |
| | | | | 2002 | 349 | 0.70 | 0.56, 0.83 |
| | | | | 2003 | 319 | 0.69 | 0.53, 0.85 |
| 528 | Mt. Calder | 9,232 | 83% | 1988 | 252 | 2.14 | 1.78 ,2.49 |
| | | | | 1997 | 272 | 1.17 | 0.96, 1.39 |
| | | | | 1999 | 165 | 0.48 | 0.31, 0.62 |
| 532 | Red Bay | 15,145 | 66% | 1987 | 177 | 0.32 | 0.18, 0.47 |
| | | | | 1994 | 256 | 0.94 | 0.74, 1.14 |
| | | | | 1996 | 281 | 1.19 | 0.97, 1.41 |
| | | | | 1997 | 248 | 1.07 | 0.89, 1.25 |
| | | | | 1998 | 283 | 0.73 | 0.59, 0.88 |
| | | | | 2001 | 337 | 0.76 | 0.61, 0.90 |
| | | | | 2002 | 289 | 1.49 | 1.28, 1.71 |
| | | | | 2003 | 314 | 1.15 | 0.94, 1.34 |
| | | | | 2004 | 315 | 0.85 | 0.68, 1.02 |
| | | | | 2006 | 295 | 1.54 | 1.31, 1.78 |
| | | | | 2015 | 230 | 1.05 | 0.86, 1.23 |
| | | | | 2018 | 280 | 1.88 | 1.63, 2.12 |
| | | | | 2019 | 259 | 1.06 | 0.86, 1.25 |
| 539 | Exchange Cove | 10,406 | 74% | 1988 | 266 | 1.39 | 1.15, 1.64 |
| | | | | 1992 | 125 | 1.10 | 0.83, 1.38 |
| | | | | 1997 | 303 | 1.25 | 1.04, 1.46 |
| 549 | Sarheen | 11,875 | 52% | 1989 | 310 | 1.73 | 1.44, 2.01 |
| | | | | 1996 | 334 | 1.00 | 0.83, 1.16 |
| | | | | 1997 | 330 | 1.00 | 0.85, 1.14 |
| | | | | 1998 | 355 | 0.42 | 0.33, 0.51 |
| | | | | 1999 | 284 | 0.64 | 0.51, 0.78 |
| | | | | 2000 | 293 | 0.98 | 0.78, 1.17 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group Plots | Mean | 95% CI[b] |
|---|---|---|---|---|---|---|---|
| | | | | 2001 | 319 | 0.45 | 0.36, 0.55 |
| | | | | 2002 | 263 | 0.69 | 0.54, 0.83 |
| | | | | 2005 | 257 | 0.78 | 0.64, 0.93 |
| | | | | 2009 | 316 | 1.75 | 1.52, 1.97 |
| | | | | 2011 | 345 | 1.56 | 1.37, 1.76 |
| 554 | Sarkar | 32,183 | 60% | 1988 | 298 | 1.28 | 1.06, 1.50 |
| | | | | 1992 | 125 | 1.10 | 0.83, 1.38 |
| | | | | 1994 | 292 | 0.92 | 0.77, 1.07 |
| | | | | 1997 | 263 | 0.61 | 0.48, 0.74 |
| | | | | 1998 | 312 | 0.29 | 0.21, 0.37 |
| | | | | 1999 | 281 | 0.74 | 0.60, 0.88 |
| | | | | 2001 | 330 | 0.45 | 0.35, 0.55 |
| | | | | 2002 | 283 | 0.76 | 0.62, 0.90 |
| | | | | 2003 | 333 | 0.50 | 0.38, 0.62 |
| | | | | 2004 | 340 | 0.61 | 0.51, 0.71 |
| | | | | 2009 | 350 | 1.66 | 1.46, 1.86 |
| | | | | 2011 | 376 | 2.24 | 1.95, 2.53 |
| | | | | 2015 | 284 | 1.38 | 1.17, 1.59 |
| | | | | 2018 | 386 | 1.44 | 1.26, 1.62 |
| | | | | 2019 | 286 | 1.32 | 1.12, 1.52 |
| 561 | Warm Chuck | 12,348 | 85% | 1984 | 326 | 1.02 | 0.66, 1.38 |
| | | | | 1985 | 295 | 1.60 | 1.36, 1.84 |
| | | | | 1989 | 302 | 2.21 | 1.91, 2.50 |
| | | | | 1991 | 291 | 2.05 | 1.73, 2.37 |
| | | | | 1996 | 276 | 1.39 | 1.17, 1.61 |
| | | | | 1997 | 247 | 1.21 | 1.01, 1.41 |
| | | | | 1998 | 246 | 1.29 | 1.08, 1.51 |
| | | | | 2000 | 288 | 0.99 | 0.81, 1.16 |
| | | | | 2002 | 221 | 1.17 | 0.94, 1.39 |
| | | | | 2006 | 277 | 1.23 | 1.01, 1.45 |
| | | | | 2009 | 278 | 1.69 | 1.45, 1.93 |
| 564 | Coronation | 19,107 | 69% | 1983 | 696 | 1.20 | 1.04, 1.36 |
| | | | | 1985 | 228 | 2.34 | |
| | | | | 1988 | 408 | 1.41 | 1.17, 1.66 |
| | | | | 1989 | 293 | 1.63 | 1.28, 1.98 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group Plots | Mean | 95% CI[b] |
|---|---|---|---|---|---|---|---|
| | | | | 1997 | 289 | 0.44 | 0.34, 0.55 |
| | | | | 2001 | 336 | 0.85 | 0.67, 1.03 |
| 569 | Baker | 31,802 | 68% | 1991 | 256 | 0.08 | 0.04, 0.12 |
| | | | | 1997 | 250 | 0.14 | 0.08, 0.20 |
| 575 | Thorne Lake | 17,970 | 68% | 1992 | 334 | 1.20 | 1.03, 1.37 |
| | | | | 1994 | 293 | 0.76 | 0.62, 0.91 |
| | | | | 1995 | 299 | 1.27 | 1.09, 1.45 |
| | | | | 1997 | 303 | 0.84 | 0.66, 0.96 |
| | | | | 1998 | 316 | 0.87 | 0.71, 1.03 |
| | | | | 1999 | 231 | 1.02 | 0.83, 1.21 |
| | | | | 2000 | 311 | 1.28 | 1.06, 1.51 |
| | | | | 2001 | 327 | 0.53 | 0.42, 0.63 |
| | | | | 2002 | 284 | 1.12 | 0.90, 1.35 |
| | | | | 2003 | 123 | 0.91 | 0.66, 1.16 |
| | | | | 2004 | 218 | 0.94 | 0.75, 1.13 |
| | | | | 2005 | 287 | 0.94 | 0.79, 1.10 |
| | | | | 2006 | 287 | 1.04 | 0.89, 1.20 |
| | | | | 2007 | 204 | 1.84 | 1.54, 2.15 |
| | | | | 2008 | 289 | 1.40 | 1.19, 1.62 |
| | | | | 2009 | 311 | 1.97 | 1.70, 2.25 |
| | | | | 2010 | 313 | 1.75 | 1.54, 1.97 |
| | | | | 2015 | 322 | 1.85 | 1.59, 2.11 |
| | | | | 2018 | 310 | 2.12 | 1.85, 2.39 |
| | | | | 2019 | 260 | 2.33 | 2.00, 2.65 |
| 578 | Snakey Lakes | 6,431 | 84% | 1986 | 279 | 0.62 | 0.51, 0.73 |
| | | | | 1988 | 300 | 1.05 | 0.84, 1.26 |
| | | | | 1989 | 200 | 1.56 | 1.26, 1.86 |
| | | | | 1993 | 356 | 0.77 | 0.61, 0.93 |
| | | | | 1997 | 310 | 1.39 | 1.17, 1.60 |
| | | | | 1998 | 225 | 0.71 | 0.55, 0.87 |
| | | | | 1999 | 250 | 0.86 | 0.67, 1.05 |
| | | | | 2000 | 263 | 1.55 | 1.24, 1.86 |
| | | | | 2001 | 358 | 0.89 | 0.74, 1.03 |
| | | | | 2004 | 203 | 0.89 | 0.72, 1.06 |
| | | | | 2005 | 235 | 1.27 | 1.03, 1.51 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group | | |
|---|---|---|---|---|---|---|---|
| | | | | | Plots | Mean | 95% CI[b] |
| | | | | 2007 | 290 | 1.54 | 1.30, 1.78 |
| | | | | 2008 | 300 | 1.43 | 1.22, 1.64 |
| | | | | 2010 | 302 | 1.36 | 1.17, 1.56 |
| | | | | 2012 | 275 | 1.87 | 1.62, 2.11 |
| | | | | 2015 | 314 | 1.39 | 1.17, 1.60 |
| | | | | 2018 | 309 | 1.72 | 1.51, 1.94 |
| | | | | 2019 | 288 | 1.61 | 1.40, 1.82 |
| 581 | Luck Lake | 19,818 | 67% | 1986 | 178 | 1.74 | 1.41, 2.07 |
| | | | | 1988 | 300 | 2.11 | 1.80, 2.41 |
| | | | | 1993 | 175 | 1.10 | 0.87, 1.32 |
| | | | | 2001 | 320 | 0.60 | 0.47, 0.72 |
| 584 | Little Ratz | 12,392 | 65% | 1992 | 272 | 0.94 | 0.76, 1.13 |
| | | | | 1997 | 255 | 1.93 | 1.64, 2.21 |
| | | | | 1998 | 282 | 0.78 | 0.64, 0.91 |
| | | | | 2000 | 304 | 1.38 | 1.18, 1.59 |
| | | | | 2001 | 287 | 1.20 | 1.00, 1.39 |
| | | | | 2002 | 195 | 2.32 | 1.92, 2.71 |
| | | | | 2003 | 335 | 1.21 | 1.03, 1.39 |
| | | | | 2004 | 228 | 1.96 | 1.68, 2.24 |
| | | | | 2005 | 291 | 1.51 | 1.28, 1.73 |
| | | | | 2007 | 233 | 2.41 | 2.06, 2.77 |
| | | | | 2008 | 246 | 1.44 | 1.19, 1.70 |
| | | | | 2009 | 305 | 2.34 | 2.07, 2.61 |
| | | | | 2010 | 355 | 2.05 | 1.79, 2.30 |
| | | | | 2012 | 281 | 2.36 | 2.06, 2.67 |
| | | | | 2015 | 312 | 1.25 | 1.06, 1.44 |
| 587 | Tuxekan | 12,129 | 77% | 1988 | 300 | 1.06 | 0.84, 1.28 |
| | | | | 1997 | 314 | 1.04 | 0.87, 1.22 |
| | | | | 1998 | 353 | 0.48 | 0.37, 0.59 |
| | | | | 1999 | 328 | 1.26 | 1.03, 1.49 |
| 621 | 12 Mile | 23,344 | 59% | 1985 | 196 | 0.31 | 0.19, 0.43 |
| | | | | 1986 | 300 | 0.64 | 0.48, 0.81 |
| | | | | 1987 | 370 | 0.65 | 0.49, 0.81 |
| | | | | 1988 | 302 | 0.62 | 0.46, 0.77 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group Plots | Mean | 95% CI[b] |
|---|---|---|---|---|---|---|---|
| | | | | 1989 | 235 | 0.78 | 0.59, 0.98 |
| | | | | 1990 | 176 | 1.18 | 0.84, 1.52 |
| | | | | 1991 | 231 | 1.84 | 1.48, 2.21 |
| | | | | 1992 | 250 | 0.43 | 0.32, 0.55 |
| | | | | 1993 | 258 | 0.84 | 0.63, 1.05 |
| | | | | 1994 | 324 | 0.93 | 0.76, 1.09 |
| | | | | 1997 | 202 | 1.45 | 1.10, 1.79 |
| | | | | 1998 | 280 | 0.83 | 0.63, 1.02 |
| | | | | 2002 | 220 | 0.51 | 0.38, 0.63 |
| | | | | 2007 | 189 | 1.59 | 1.32, 1.86 |
| | | | | 2008 | 190 | 2.14 | 1.75, 2.52 |
| | | | | 2010 | 308 | 1.38 | 1.19, 1.55 |
| | | | | 2012 | 247 | 2.27 | 1.87, 2.66 |
| | | | | 2018 | 316 | 1.57 | 1.37, 1.78 |
| 625 | Trocadero | 16,624 | 75% | 1995 | 235 | 1.74 | 1.41, 2.06 |
| | | | | 1997 | 235 | 1.18 | 0.97, 1.38 |
| | | | | 1998 | 267 | 0.97 | 0.78, 1.16 |
| | | | | 2002 | 332 | 0.93 | 0.75, 1.10 |
| 628 | Pt. Amagura | 10,477 | 26% | 1997 | 255 | 1.04 | 0.83, 1.24 |
| | | | | 1998 | 325 | 0.93 | 0.78, 1.08 |
| 635 | Port Refugio | 9,118 | 50% | 1985 | 317 | 2.69 | 2.27, 3.12 |
| | | | | 1986 | 324 | 2.52 | 2.09, 2.96 |
| | | | | 1987 | 369 | 1.76 | 1.46, 2.07 |
| | | | | 1988 | 270 | 1.15 | 0.90, 1.40 |
| | | | | 1989 | 507 | 0.80 | 0.68, 0.93 |
| | | | | 1990 | 232 | 1.25 | 1.03, 1.48 |
| | | | | 1991 | 367 | 1.13 | 0.95, 1.32 |
| | | | | 1992 | 254 | 0.76 | 0.57, 0.95 |
| | | | | 1993 | 213 | 1.35 | 0.98, 1.71 |
| | | | | 1994 | 280 | 1.85 | 1.51, 2.19 |
| | | | | 1997 | 276 | 0.82 | 0.65, 1.00 |
| | | | | 1998 | 315 | 0.78 | 0.61, 0.96 |
| | | | | 2000 | 272 | 0.94 | 0.75, 1.13 |
| | | | | 2002 | 317 | 1.12 | 0.93, 1.31 |
| | | | | 2007 | 311 | 1.72 | 1.48, 1.96 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group Plots | Mean | 95% CI[b] |
|---|---|---|---|---|---|---|---|
| | | | | 2008 | 342 | 1.53 | 1.33, 1.73 |
| 679 | Kitkun Bay | 15,359 | 75% | 1988 | 240 | 0.31 | 0.20, 0.42 |
| | | | | 1989 | 273 | 0.89 | 0.71, 1.07 |
| | | | | 1995 | 264 | 0.40 | 0.28, 0.52 |
| | | | | 1997 | 261 | 0.31 | 0.19, 0.44 |
| 685 | Nutkwa | 17,079 | 73% | 1988 | 234 | 0.09 | 0.02, 0.16 |
| 716 | Helm Bay | 16,127 | 57% | 1981 | 704 | 0.16 | 0.12, 0.19 |
| | | | | 1984 | 302 | 0.54 | 0.44, 0.65 |
| | | | | 1985 | 181 | 0.85 | 0.65, 1.05 |
| | | | | 1988 | 247 | 1.66 | 1.38, 1.95 |
| | | | | 1991 | 240 | 1.63 | 1.35, 1.92 |
| | | | | 1992 | 169 | 1.25 | 0.96, 1.53 |
| | | | | 1993 | 286 | 1.37 | 1.16, 1.59 |
| | | | | 1995 | 284 | 1.31 | 1.09, 1.52 |
| | | | | 1997 | 265 | 0.79 | 0.65, 0.99 |
| | | | | 1998 | 232 | 0.44 | 0.34, 0.55 |
| | | | | 1999 | 82 | 0.70 | 0.53, 0.87 |
| | | | | 2001 | 251 | 0.41 | 0.30, 0.51 |
| | | | | 2004 | 170 | 0.25 | 0.15, 0.35 |
| | | | | 2005 | 286 | 0.22 | 0.15, 0.29 |
| | | | | 2007 | 243 | 0.50 | 0.35, 0.64 |
| | | | | 2010 | 256 | 0.24 | 0.16, 0.31 |
| | | | | 2013 | 291 | 0.18 | 0.12, 0.23 |
| | | | | 2015 | 261 | 0.16 | 0.09, 0.24 |
| | | | | 2017 | 280 | 0.38 | 0.28, 0.48 |
| | | | | 2019 | 270 | 0.59 | 0.47, 0.72 |
| 719 | Port Stewart | 21,482 | 55% | 1993 | 289 | 1.22 | 1.03, 1.42 |
| | | | | 1995 | 278 | 1.61 | 1.35, 1.87 |
| | | | | 1997 | 289 | 1.29 | 1.08, 1.50 |
| | | | | 1999 | 182 | 0.77 | 0.57, 0.97 |
| | | | | 2001 | 289 | 0.21 | 0.13, 0.29 |
| | | | | 2013 | 284 | 0.10 | 0.06, 0.15 |
| 722 | Spacious Bay | 31,461 | 44% | 1993 | 300 | 0.54 | 0.43, 0.64 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group | | |
|---|---|---|---|---|---|---|---|
| | | | | | Plots | Mean | 95% CI[b] |
| | | | | 1995 | 283 | 0.45 | 0.35, 0.54 |
| | | | | 1997 | 276 | 0.43 | 0.33, 0.53 |
| | | | | 1999 | 161 | 0.09 | 0.04, 0.13 |
| | | | | 2001 | 285 | 0.06 | 0.02, 0.09 |
| 738 | Margaret | 19,286 | 67% | 1985 | 515 | 0.57 | 0.47, 0.66 |
| | | | | 1986 | 251 | 0.84 | 0.69, 1.00 |
| | | | | 1988 | 110 | 1.31 | 0.96, 1.67 |
| | | | | 1989 | 129 | 0.62 | 0.44, 0.80 |
| | | | | 1990 | 274 | 0.56 | 0.44, 0.68 |
| | | | | 1991 | 272 | 0.76 | 0.58, 0.94 |
| | | | | 1993 | 281 | 0.31 | 0.23, 0.39 |
| | | | | 1995 | 304 | 0.70 | 0.56, 0.84 |
| | | | | 1997 | 297 | 0.56 | 0.43, 0.68 |
| | | | | 1999 | 264 | 0.98 | 0.47, 1.45 |
| | | | | 2001 | 279 | 0.44 | 0.34, 0.54 |
| 748 | George Inlet | 19,448 | 28% | 1981 | 110 | 0.21 | 0.09, 0.33 |
| | | | | 1984 | 344 | 0.27 | 0.19, 0.35 |
| | | | | 1985 | 313 | 0.52 | 0.39, 0.65 |
| | | | | 1989 | 169 | 1.41 | 1.08, 1.75 |
| | | | | 1990 | 240 | 1.03 | 0.82, 1.25 |
| | | | | 1991 | 168 | 1.49 | 1.15, 1.84 |
| | | | | 1992 | 195 | 0.65 | 0.49, 0.81 |
| | | | | 1994 | 309 | 0.95 | 0.79, 1.11 |
| | | | | 1996 | 305 | 0.98 | 0.76, 1.19 |
| | | | | 1998 | 314 | 0.52 | 0.40, 0.65 |
| | | | | 2000 | 270 | 0.51 | 0.38, 0.64 |
| | | | | 2002 | 227 | 0.18 | 0.09, 0.28 |
| | | | | 2004 | 309 | 0.25 | 0.18, 0.32 |
| 752 | Whitman Lake | 6,015 | 38% | 1981 | 45 | 0.18 | 0.02, 0.33 |
| | | | | 1987 | 187 | 0.16 | 0.09, 0.23 |
| | | | | 1990 | 193 | 0.46 | 0.32, 0.59 |
| | | | | 1992 | 189 | 0.20 | 0.12, 0.28 |
| | | | | 1997 | 181 | 0.81 | 0.63, 0.98 |
| | | | | 1998 | 209 | 0.47 | 0.33, 0.61 |
| | | | | 2020 | 270 | 0.87 | 0.67, 1.08 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group | | |
|---|---|---|---|---|---|---|---|
| | | | | | Plots | Mean | 95% CI[b] |
| 758 | Carroll Pt. | 11,629 | 34% | 1985 | 118 | 0.66 | 0.46, 0.86 |
| | | | | 1986 | 118 | 0.75 | 0.56, 0.95 |
| | | | | 1988 | 85 | 1.15 | 0.81, 1.48 |
| | | | | 1992 | 87 | 0.28 | 0.14, 0.41 |
| | | | | 1994 | 125 | 0.70 | 0.49, 0.90 |
| | | | | 1998 | 125 | 0.51 | 0.38, 0.64 |
| | | | | 2002 | 84 | 0.36 | 0.21, 0.50 |
| | | | | 2008 | 122 | 1.42 | 1.00, 1.83 |
| 759 | Moth Bay | 7,652 | 23% | 1985 | 140 | 0.59 | 0.42, 0.74 |
| | | | | 1986 | 156 | 0.98 | 0.79, 1.17 |
| | | | | 1988 | 78 | 0.71 | 0.46, 0.97 |
| | | | | 1992 | 136 | 0.48 | 0.30, 0.66 |
| | | | | 1994 | 136 | 0.94 | 0.71, 1.17 |
| | | | | 1998 | 176 | 0.68 | 0.53, 0.82 |
| | | | | 2002 | 150 | 1.09 | 0.84, 1.34 |
| | | | | 2008 | 191 | 1.30 | 1.08, 1.53 |
| 760 | Lucky Cove | 12,377 | 43% | 1985 | 335 | 1.16 | 1.00, 1.33 |
| | | | | 1986 | 258 | 1.16 | 0.95, 1.32 |
| | | | | 1988 | 65 | 1.01 | 0.68, 1.34 |
| | | | | 1990 | 263 | 1.10 | 0.92, 1.27 |
| | | | | 1991 | 271 | 1.39 | 1.07, 1.70 |
| 761 | Vallenar | | | 2003 | 96 | 0.99 | 0.74, 1.24 |
| 763a | Bostwick Inlet | | | 2015 | 277 | 0.53 | 0.41, 0.65 |
| | | | | 2016 | 275 | 0.60 | 0.48, 0.72 |
| | | | | 2017 | 267 | 1.63 | 1.42, 1.84 |
| | | | | 2018 | 251 | 1.20 | 1.01, 1.39 |
| 763b | Bostwick Road | | | 2018 | 298 | 1.42 | 1.20, 1.64 |
| | | | | 2019 | 151 | 1.68 | 1.38, 1.99 |
| | | | | 2020 | 335 | 1.80 | 1.60, 2.00 |
| 763 all | Bostwick Combined (Inlet + Roads) | | | 2018 | 549 | 1.32 | 1.17, 1.47 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group | | |
|---|---|---|---|---|---|---|---|
| | | | | | Plots | Mean | 95% CI[b] |
| 764 | Blank Inlet | 3,640 | 19% | 1981 | 108 | 1.24 | 0.89, 1.59 |
| 765 | Dall Head | 4,803 | 63% | 1981 | 69 | 0.52 | 0.31, 0.74 |
| | | | | 1996 | 295 | 1.07 | 0.90, 1.24 |
| | | | | 1998 | 287 | 0.84 | 0.67, 1.01 |
| | | | | 2000 | 285 | 0.96 | 0.77, 1.14 |
| | | | | 2002 | 284 | 0.76 | 0.59, 0.94 |
| | | | | 2003 | 279 | 0.91 | 0.71, 1.11 |
| | | | | 2004 | 282 | 0.66 | 0.53, 0.79 |
| | | | | 2005 | 177 | 0.87 | 0.62, 1.12 |
| | | | | 2008 | 280 | 0.55 | 0.39, 0.72 |
| | | | | 2011 | 288 | 0.43 | 0.29, 0.58 |
| | | | | 2012 | 258 | 0.53 | 0.41, 0.64 |
| | | | | 2013 | 297 | 0.44 | 0.34, 0.55 |
| | | | | 2014 | 268 | 0.62 | 0.45, 0.80 |
| | | | | 2015 | 277 | 0.53 | 0.41, 0.65 |
| | | | | 2017 | 276 | 1.87 | 1.64, 2.10 |
| | | | | 2018 | 285 | 1.63 | 1.39, 1.87 |
| | | | | 2019 | 259 | 2.52 | 2.24, 2.80 |
| 767 | Duke Island | 39,171 | 17% | 1996 | 294 | 0.05 | 0.02, 0.09 |
| | | | | 2000 | 282 | 0.13 | 0.08, 0.18 |
| | | | | 2002 | 292 | 0.19 | 0.12, 0.26 |
| | | | | 2008 | 291 | 0.16 | 0.09, 0.22 |
| 769 | Alava Bay | 13,563 | 60% | 1985 | 311 | 0.52 | 0.39, 0.65 |
| | | | | 1986 | 326 | 0.85 | 0.68, 1.01 |
| | | | | 1991 | 143 | 1.64 | 1.22, 2.05 |
| | | | | 1994 | 326 | 0.79 | 0.64, 0.94 |
| | | | | 1996 | 324 | 0.93 | 0.77, 1.09 |
| | | | | 1998 | 335 | 0.66 | 0.52, 0.79 |
| | | | | 2000 | 329 | 0.75 | 0.56, 0.93 |
| | | | | 2002 | 107 | 1.22 | 0.90, 1.55 |
| | | | | 2004 | 313 | 0.92 | 0.75, 1.09 |
| | T3 only | | | 2006 | 92 | 1.01 | 0.75, 1.27 |
| | | | | 2008 | 330 | 1.14 | 0.95, 1.32 |

| VCU | Name | Number of acres | Percent CFL[a] | Year | Pellet group | | |
|---|---|---|---|---|---|---|---|
| | | | | | Plots | Mean | 95% CI[b] |
| 772 | Wasp Cove | 4,882 | 90% | 1985 | 271 | 0.41 | 0.31, 0.51 |
| | | | | 1986 | 300 | 0.50 | 0.38, 0.62 |
| | | | | 1989 | 145 | 0.58 | 0.39, 0.77 |
| | | | | 1991 | 207 | 0.13 | 0.07, 0.18 |
| 821 | Winstanley Island | 14,104 | 45% | 1991 | 49 | 0.27 | 0.11, 0.42 |
| 859 | Very Inlet | | | 2002 | 306 | 0.11 | 0.07, 0.16 |
| 999a | Gravina | | | 1981 | 226 | 1.06 | 0.89, 1.22 |
| | (All Transects) | | | 1984 | 1,087 | 0.86 | 0.78, 0.94 |
| | | | | 1985 | 1,172 | 1.23 | 1.13, 1.32 |
| | | | | 1986 | 1,267 | 1.40 | 1.30, 1.50 |
| 999b | Gravina | | | 1984 | 376 | 0.88 | 0.73, 1.03 |
| | (Transects T1, T2, T3) | | | 1985 | 224 | 1.44 | 1.20, 1.67 |
| | | | | 1986 | 346 | 1.62 | 1.43, 1.81 |
| | | | | 1987 | 334 | 1.63 | 1.41, 1.84 |
| | | | | 1988 | 278 | 2.06 | 1.78, 2.35 |
| | | | | 1989 | 182 | 1.13 | 0.86, 1.41 |
| | | | | 1990 | 279 | 1.40 | 1.12, 1.68 |
| 999b | Gravina | | | 1991 | 154 | 1.12 | 0.80, 1.43 |
| | (Transects T1, T2, T3) | | | 1992 | 302 | 1.22 | 1.05, 1.38 |
| | | | | 1994 | 331 | 1.58 | 1.37, 1.79 |
| | | | | 1996 | 338 | 1.47 | 1.28, 1.67 |
| | | | | 1997 | 274 | 1.71 | 1.47, 1.95 |
| | | | | 1998 | 307 | 1.34 | 1.12, 1.56 |
| | | | | 2000 | 267 | 1.24 | 1.06, 1.42 |
| | | | | 2003 | 78 | 0.87 | 0.54, 1.20 |
| | | | | 2005 | 205 | 1.20 | 0.95, 1.46 |
| | | | | 2006[e] | 89 | 0.83 | 0.57, 1.09 |
| | | | | 2007[f] | 167 | 0.86 | 0.68, 1.04 |
| | | | | 2010 | 258 | 0.33 | 0.24, 0.41 |
| | | | | 2013[g] | 92 | 0.32 | 0.18, 0.45 |

[a] CFL stands for commercial forest land, or volume classes 4–7 (otherwise referred to as productive old growth forest, "POG," or productive forest land, "PFL"). Percent CFL were calculated in the 1980s and have not been updated to reflect more recent timber management.

[b] En dashes indicate that raw data were unavailable, and confidence intervals could not be calculated. Confidence interval is abbreviated as CI.
[c] In 2015 only 2 of 3 transects were surveyed at Pleasant Island (VCU 185).
[d] An extra transect was surveyed in 2014 at East Duncan (VCU 437) for a total of 4 transects surveyed that year.
[e] Only Transect T1 was surveyed.
[f] Only Transects T2 and T3 were surveyed due to logging on Transect T1.
[g] The last survey at Gravina was in 2013 because the transects were cut.